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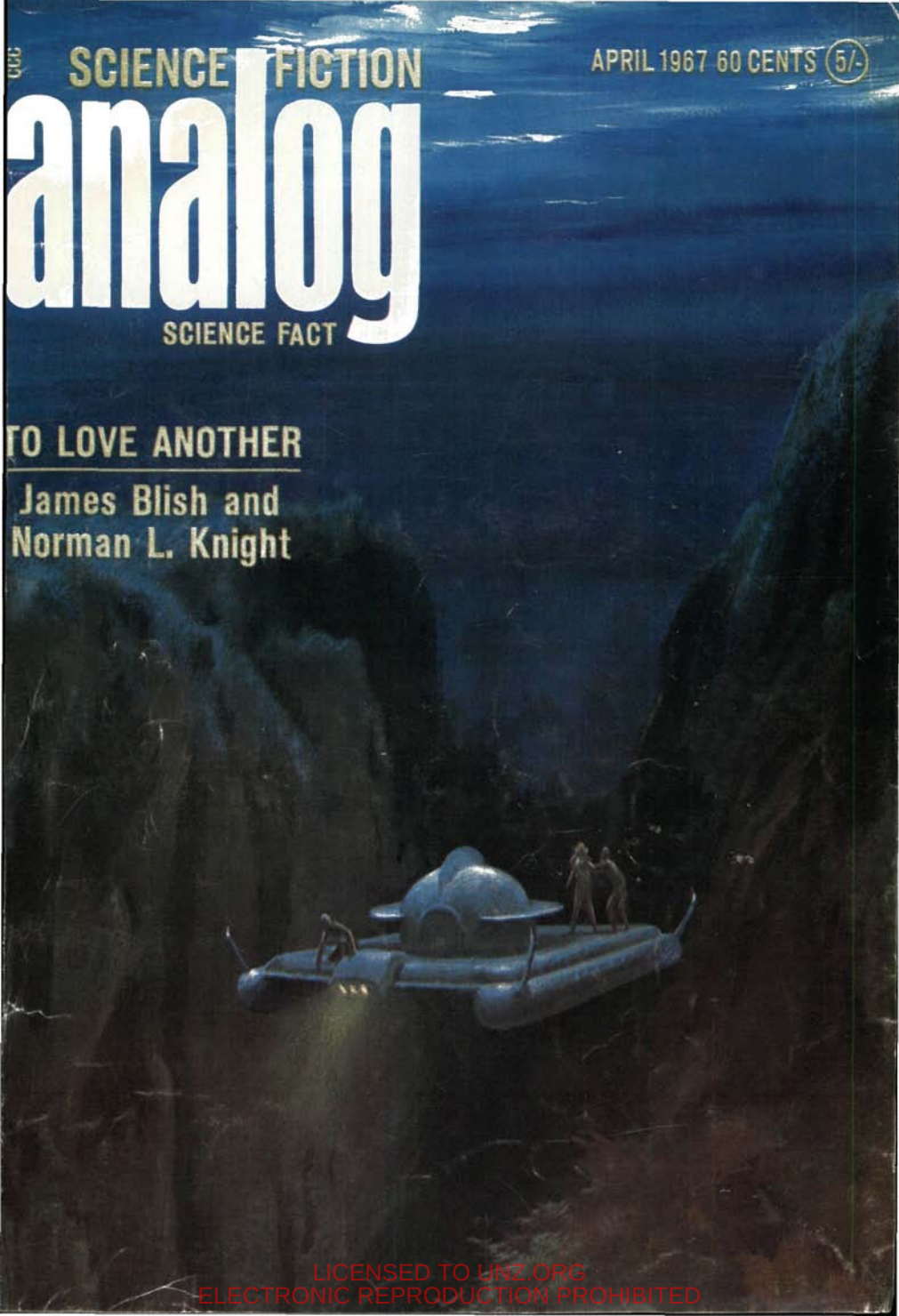

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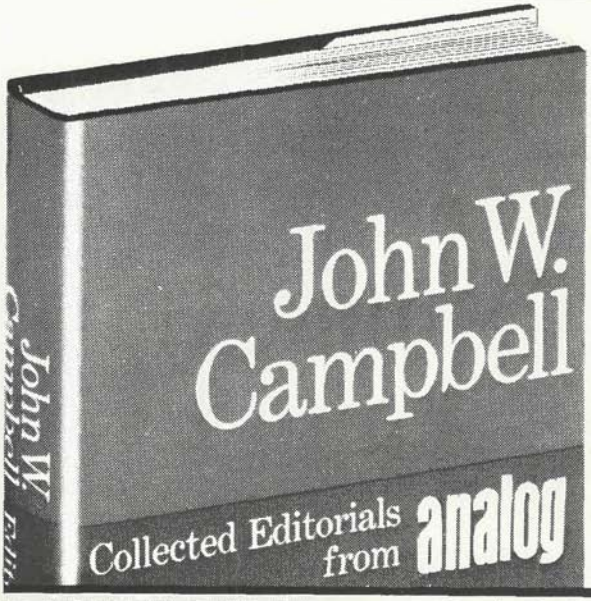

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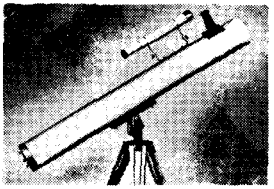

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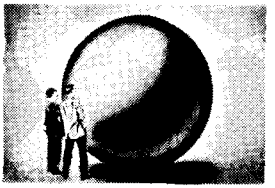

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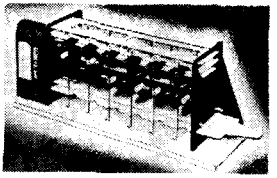

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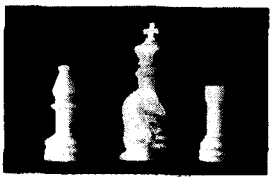

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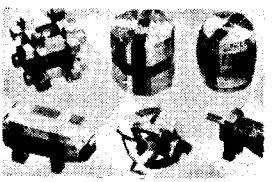

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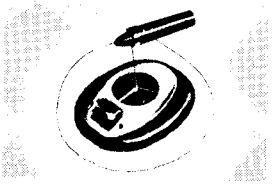

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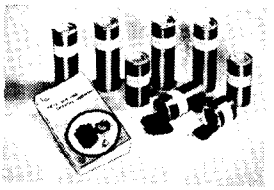

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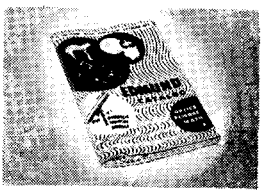

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IN OUR TIME . . .

An Editorial by John W. Campbell

Nearly all those who are most vociferous in denouncing the war in Viet Nam are people born after 1920. Of course, part of that is due to the fact that those older than forty-seven aren't eligible for the draft—but there's an important historical factor that is, for the younger people, something in a history book, and for their elders something they experienced.

History books give a time-perspective covering some seven thousand years. There's the Battle of Cannae and Bull Run and Waterloo, and there were campaigns at Stalingrad and Hannibal crossing the Alps and at Guadalcanal.

The perspective is so long that, like a telephoto lens on a camera, it collapses the separation, and things all seem kinda at the same distance. Ancient, and no longer important.

People born by 1920 were old enough, in 1938, to have the events appearing in the newspaper headlines have meaning—nervous-emotional-tension meaning—to them, then. It wasn't ancient, dry, or dusty. The consequences of those events were very real, very personally-meaningful, and memorable.

I think those acute memories have considerable to do with the tendency of older men to have a little less conviction that "all we have to do is make peace with Hanoi . . ."

The Viet Cong, we are told, is a political movement, strictly native to South Viet Nam, that is seeking political power in their native land, and they really aren't associated with the Communists of North Viet

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Nam, or China. It's just that they, completely independently, want a Communist government. It's not true, say the Communists, that they are invaders from North Viet Nam, seeking to overthrow South Viet Nam's independence.

And in 1938, Konrad Henlein who was Der Fuehrer of the Sudeten German Party in Czechoslovakia was, we were assured, not an agent of Hitler at all—he was just another Aryan Superman who agreed with Hitler's policies toward Jews and lesser races like Czechs, and wanted to join with his Aryan brothers. The bully boys who started showing up starting riots and pillaging anti-Nazi Czechs were just good, local citizens—they weren't Hitler-Nazis, or controlled from Berlin. It just looked that way. It was all because they recognized the goodness and wisdom of Hitler's philosophy, and wanted to be allowed to install their own government by the supermen, of the supermen and for the supermen in their native Czechoslovakia. The Sudetens were being cruelly frustrated in their natural desire to rule the lesser races by the Czech government. The Czech government was compelling them to live by a code of ethics that no proper Nazi Superman could be expected to tolerate.

The Sudeten Germans, strongly organized and encouraged by Nazi specialists, had their terror campaign going very well, gaining more and more power—

Bit by bit the thing built up, until the famous Munich meeting. Chamberlain came back to London from that meeting to announce—smiling happily—that he had secured "Peace in our time." Czechoslovakia had been surrendered to Hitler.

"Our time" turned out to be about one year, of course. Chamberlain was an exceedingly poor student of historical movements; he simply didn't recognize Hitler and the Nazi Party for what they were.

In an earlier time, the Nazis would not have called Hitler "Der Fuehrer"—Mussolini wouldn't have been "Il Duce." They'd have been "The Prophet." The Nazi-Fascist movements weren't political in the normal sense—they were quasi-religious fanaticisms.

Hitler was typical of the Prophet type; an absolutely intransigent personality, incapable of understanding the meaning of "compromise" in its true sense. There was, as to all fanatic-prophet types, One Right Way, and he knew what it was. It was the *only* right way; things *had* to go that way. He would not—could not truly imagine—compromise. There must be One World State—his.

To think of him as a self-aggrandizing egomaniac is a dangerous mistake; he wasn't power-mad. He was a fanatic prophet of a new religion—Nazism—in which he was totally consumed, more deeply committed than his most ardent believ-

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er. "Compromise" to him meant "I'll wait a little while for what I want because I'm not quite ready."

It was absolutely impossible to get such a fanatic to yield anything —and certainly not his intentions.

In "Mein Kampf" he had laid out the blueprint of what he planned. Almost no one believed he could *really* mean *that!* It was just propaganda to get votes for the Nazi politicians—he couldn't mean any such nonsense!

The basic of the Nazi philosophy was that the world should be ruled by the Nazi supermen—the Germanic Aryans. And that the Nazi One World must be imposed—no matter what objections the inferior races of Earth might raise.

Now when you have a fanatical philosophy, and a people convinced that that philosophy *must* be imposed on all the world, and by force of arms because that is the quick, efficient, and time-honored way of accomplishing such things—you can make peace with them, with their Prophet, in one and only one way. You must surrender totally. There is no other answer admissible. You must withdraw all resistance, turn over to the Prophet and his people everything he wants, and apologize for having troubled him by suggesting he shouldn't take it.

The key characteristic is the religious fervor, the conviction of the inevitable necessity of taking over the world, and an absolute intransigence, an absolute refusal to compromise their Great And Necessary Goal.

You can find quite a few such situations in past history.

The most obvious example, of course, is the Moslems who swept out of the Near East with the words of their Prophet, and a flaming fanaticism. They were convinced that all men must be converted to Islam by fire and sword—and made a remarkably good try at pulling it off. They conquered the greatest empire Mankind has ever built up. Rome was a piker—Alexander's empire was just one corner of Islam's!

They were finally induced to modify their great plan—to compromise their One World dream.

It was done in the same way the Nazis were finally induced to compromise their plan for One Nazi World.

They got licked.

At Tours, the Christians of Europe stopped them, and turned them back. And when an Empire based on conversion by fire and sword gets stopped, and turns back onto itself—the ramshackle affair starts coming apart at the seams fairly rapidly. Conversion by terror remains effective only so long as the terror does; let the terrorist come home with his ears beat in, and the converts start coming unstuck. The converts now show a strong interest in the philosophy of the super-supermen who just tied a tin can on their conquering supermen and sent 'em home. *continued on page 174*

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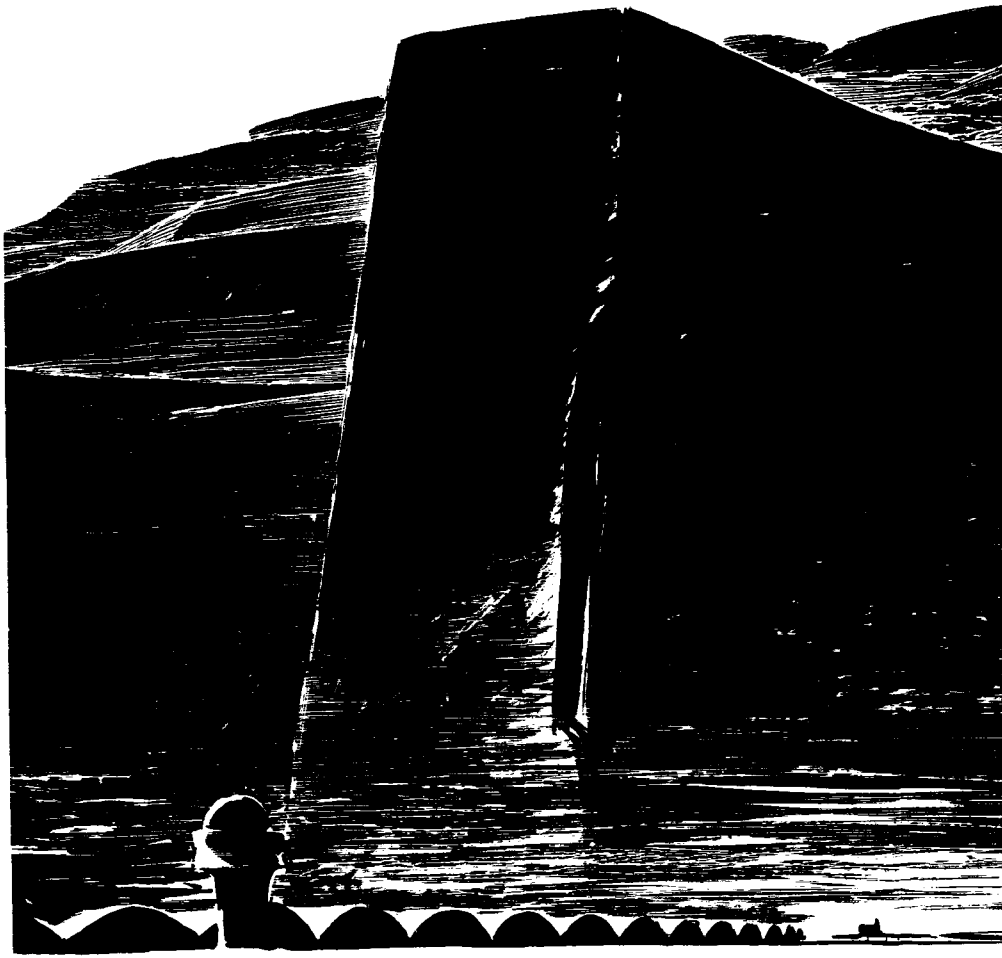
To Love Another

There were obvious problems in adjustment
for a true-amphibian Triton and a pure-air-breather
Drylander in trying to build a marriage.
But there was a wildly other problem she didn't know about,
one that made it necessary . . .

James Blish and Norman L. Knight

Illustrated by John Schoenherr



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I

By 2794, Dorthy Sumter had been head of Submarine Products Corporation for nearly three years, but today more than ever she was convinced that Prime Center was either slighting her or ignoring her outright. Probably it wasn't personal; it was simply that Prime Center still thought of SPC as a mere junior partner in the job of feeding the insatiable billions of the world.

Whatever the reason, her attempts to reach Prime Center heads by vidphone were being frustrated by their office computers, which told her with mindless politeness that the person called was not available—which was probably sometimes true—but that a conference could be arranged for later. The time for one of those conferences was now almost upon her; she was waiting determinedly for it in her office at SPC's Pacific regional headquarters on the Great Barrier Reef.

On either side of Dorthy sat her first and second deputies, the Tritons Storm and Tioru. They could have been taken for unusually dark-skinned Polynesians by a careless glance. But they had no ears; instead, fleshy fernlike auditory antennae sprouted from their foreheads. Their scalps were hairless and covered with pallid tubercles, which in the dark glowed with a silvery phosphorescence. Their fingers were longer than Drylanders', and were webbed to the second joint. In their sides, between their upper ribs, were gill slits from which their exhalations issued with a lisping whisper.

Both were a head taller than Dorthy; their size and darkness contrasted strikingly with her slender blondness. Her skin was the type that resists the sun; it had tanned only to a light golden brown, but had brought forth innumerable small freckles. Her hair, upswept on either side into two massive rolls, made the Tritons look balder than ever. But they were not looking at each other, but at the clock.

"In a few minutes we should hear from Chen U," Tioru said.

"Or his office computer," Dorthy said grimly.

He touched her briefly, reassuringly. It was against office etiquette—to say the least of the matter—but Dorthy no longer cared. During the Barrier-hilthon rescue operation, their formal relation—corporation chief and deputy—had grown into a close, though unspoken comradeship. To Dorthy's initial dismay, she knew that it wasn't going to stop there—and worse, that she didn't want it to stop.

Reason, as usual, was all against it. Of course there had been Triton-Drylander liaisons in the past; and of course, usually they had been miserable. Many Drylanders still feared and despised Tritons, and their hybrids. As she watched the

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progress of the sweep second-hand, Tioru's presence and touch were both comforting and disquieting, and her thoughts were a queer and chaotic mixture.

Can I stay with Tioru? How can we manage it? There are so many good reasons against it . . . I know them all . . . Our worlds are different . . . Love is a hazard to navigation . . . But how can I tell him —and do they really matter . . . I must think of something else for a minute. I'll never be any good at this job . . . Why hasn't SPC been notified about the asteroid? All the other corporations have been told . . . What was that about the new slime culture? Off Wreck Reef—Strain C-7. Something about bits of it separating and crawling away. What about the other cultures? . . . Please, Tioru, go away and let me think! . . . No, no, don't go . . . it doesn't matter—

The sweep hand pointed vertically up, the vidscreen glowed bluish-silver, and there was an outburst of electronic twittering. Chen U's delicately molded Mongolian features were suddenly before her.

"I regret that I couldn't talk to you before," he said gravely. "Nevertheless your message about Project Mile-Deep interested me greatly. But I hesitate to approve the experiment that you suggest, Dorthy. The hazards are too great."

"The sea is always hazardous."

"True. But as head of World Resources I have more to think about than the sea, and I have to be conservative. For instance, you yourself are a valuable resource which we wish to conserve. Otherwise we would never have named you to Prime Center."

Dorthy stared at Chen U's blank expression with renewed annoyance, but managed to swallow her frustration.

"I'm glad to hear I'm so highly regarded," she said. "But I'm not immortal. Sooner or later I'll have to be replaced, and even right now, Storm and Tioru are both qualified to do it. So any threat to my personal safety is not critical."

"Nevertheless—"

"Besides, we're convinced that the hazards are minimal. We've checked the procedure from stem to stern and back again in the pressure tank, using chimpanzees that have been conditioned to tolerate gill-breathing gear. They came through it nicely."

"I am not conservative of chimpanzees," Chen U said. "But for a human being to go down five thousand feet in nothing but scuba gear —I know, the gill rig will equalize the pressure in your body cells with that of the water, you'll take an enzyme injection against the oxygen-nitrogen toxicity, the Tritons will monitor you and have a decompression chamber handy—you see I really have read your memo. But it fails to answer one question: Why do *you* have to go, Dorthy?"

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"I'll not ask another Drylander to do it before I do, that's all. Besides, if I'm able to go down a mile and stay there for a while—the enyzme effect lasts forty-eight hours—it will increase my usefulness to SPC tremendously, to say nothing of all the other Drylanders who are doing undersea work. A mile down may be only the beginning!"

Chen U looked at the two Tritons. "Do *you* think it's safe?"

"Yes," Tioru said. "I had some misgivings at first, but we've been thorough. It's safe enough."

Storm nodded. Chen U sighed and tapped his fingertips together judiciously. Probably he'd heard rumors about Tioru and Dorthy. It could not have been kept a secret. And she knew that he regarded the Tritons as essentially human—which they were—and did not share the revulsion which many Drylanders would feel toward such a match. She had an impulse, quickly repressed, to add: *Besides, I'll feel that I'm a little nearer to being like a Triton.*

"You make it difficult for me to refuse," Chen U said at last. "But I'll have to talk to the rest of the Center. In the meantime, Dorthy, I beg of you, don't do any more diving of this kind—not even tank tests."

His image vanished from the screen, which glowed blankly for an instant, then went dark.

"Blast!" Dorthy said. "Delays, timidity, obstacles! How much longer do we have to wait?"

"Until," Storm said mildly, "we hear again from Chen U, no doubt."

The rebuilding of chromosomes by planned rearrangement of the genes, and the controlled mutation of specific genes to produce a specific desired change in the form or function of an organism, was brought about for the first time during the Twenty-first Century. The technique became known as *tectogenetics.* But three hundred years had to elapse before the state of the art permitted it to be applied to Man.

Thus was born the Triton—amphibious Man. For the first generation, tectogenetically altered human ova and sperm were brought together in silicoid "wombs." Subsequent generations were conceived and born in the normal manner.

At first there were social and emotional conflicts aplenty between the two varieties of Man; though they did not and could not occupy the same living space, each felt the pressure of the other on the planet. With a total terrestrial population of about one trillion, that was inevitable.

Then came the Barrier-hilthon disaster. The Barrier-hilthon was a pleasure resort with facilities for two million guests; a steel sphere thirty-five hundred feet in diameter, resting on the ocean bottom off the Great Barrier Reef, but with the

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upper portion projecting above the surface. Thanks to a computer malfunction, the sphere drifted away from its emplacement and sank in six hundred fifty fathoms.

The ingenuity and fast action of the nearby Triton community on Great Barrier rescued the occupants of the resort with a remarkably low percentage of casualties. After that, Drylanders felt a little better about Tritons.

A little.

She rose from the console and walked slowly to the seaward part of the transparent wall. The tide was coming in and all the lagoons and channels among the ridges, boulders, and coral archipelagoes of the Reef were alive with swirling foam-flecked currents, white-crested rollers, and leaping jets of spume. Far away across this flashing, foaming turmoil she could see the small dark figures of a band of Triton children running along a sandbar, diving into the rollers, and reappearing on a little beach at the base of a jagged pinnacle of rock which the waves had sculptured into a natural Gothic arch. She regarded them pensively.

Tioru came up behind her and gently laid his arm across her shoulders.

"What are you thinking?" he said.

"About us."

"About children?"

"Yes!"

There was a catch in her voice that was almost a sob. Then she burst out, "Oh, Tioru! What's the use of marriage if we can't have children? I think and I worry and I can't decide!"

"But we *can* have children. There have been Triton-Drylander marriages before and most of them had children."

"That isn't what I meant. I mean —we can't know what they'll be like!"

"One can form a rough idea of the probabilities. I've been investigating. During all the time since the beginning of the Tritons there have been more than two thousand Triton-Drylander children. Three of them were short-lived abnormalities, ten were stillborn. The rest were either normal Drylanders or Tritons, or intermediates. Mostly intermediates."

"Intermediates! Yes! They worry me as much as the monsters, I think. They're the In-Betweeners—between two worlds and part of neither. They live in a third world."

"That's only half true. The Drylanders frequently don't accept the In-Betweeners very well, but you can't bring that charge against the Tritons. To many a Drylander we're a weird, abnormal sort of folk ourselves, and we can be sympathetic toward the In-Betweeners. You should know a few. There are several right here on the Reef."

"That's true."

"Do they look, talk, or act as if they were unhappy?"

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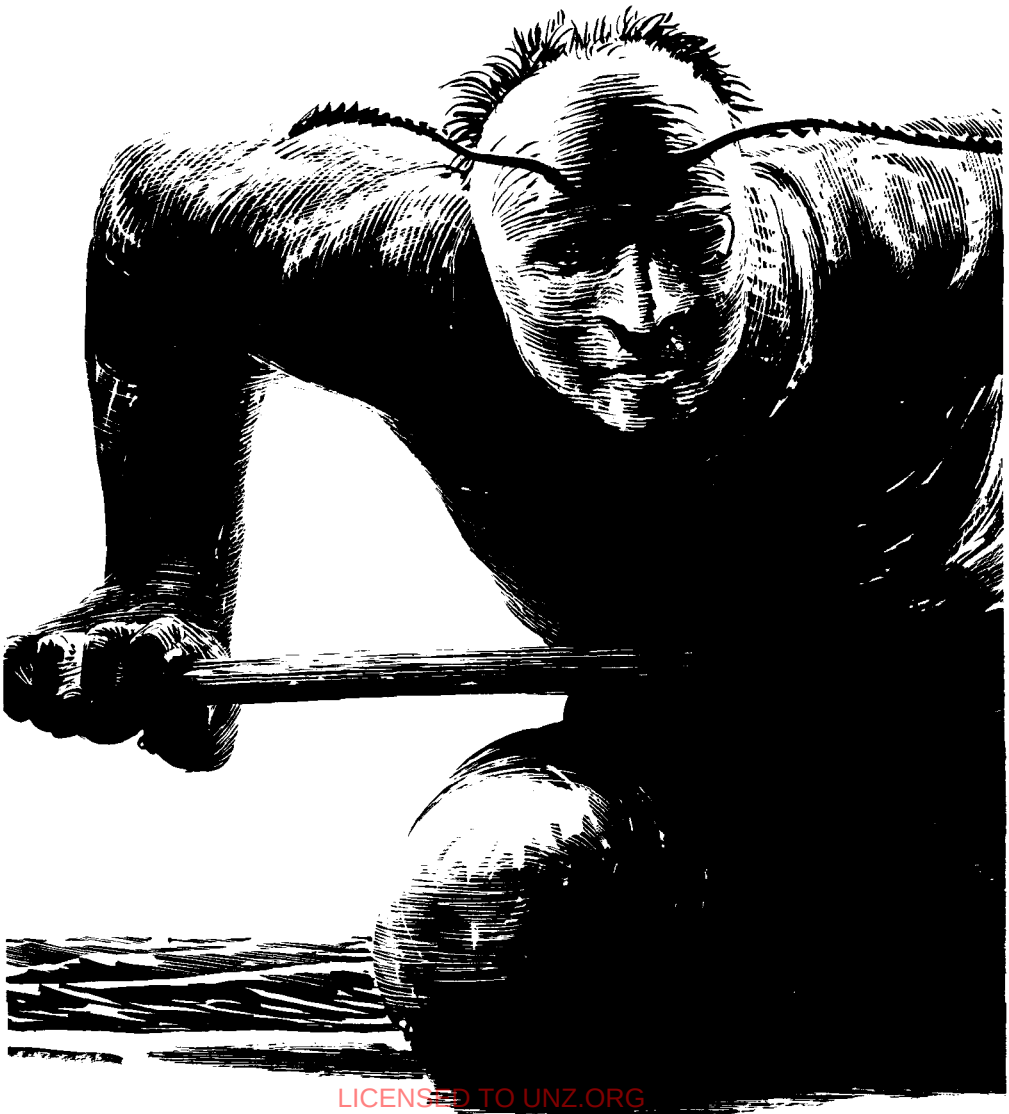
"Well, no more than anyone else does occasionally—I guess."

"Then what's the problem?"

"You're driving me into a corner with logic. I don't know! What is it really like to be an In-Betweener? What do they think and feel when they wake up in the night?"

"I've known several In-Betweeners intimately enough to ask them how they felt about themselves," said Tioru. "All maintained that they'd rather remain half Triton and live on the Reef than to be a Drylander, if they had the choice. I doubt that there's anything that



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would persuade them to live in a Drylander city. You grew up in Great London. You know what it's like."

Dorthy shuddered and said, "It spreads over half of England and has pushed out to sea on pillars and arches. It's a people-reef. They're almost as sedentary as coral polyps. Most of them are unemployed and *like* it. Everybody sits in apartments watching 3V, talking to friends on the vidphone, making love, eating Food Corporation meals out of the autoservers, and doing the prescribed daily exercises. If they fancy

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themselves as intellectuals, they watch 3V fiction from Bibtek Central. If they venture out into the city beyond their immediate neighborhood to visit friends in person, it's a great adventure. It takes them a week to make preparations and to work up courage to do it, and they talk about it for months afterward. The local customs vary from city to city but the pattern's the same everywhere. The human race is slowly dying of dry rot."

"Then they're being surprisingly prolific while dying," said Tioru. "Those who have jobs are not dying of dry rot. You're not. The Tritons are not."

"*That* I'll have to admit. The Tritons are the only ones who know what it is to live freely and joyfully. They've escaped into the sea and they have it all to themselves, except for Drylanders like me who work for SPC."

Tioru looked at Dorthy quizzically.

"You're a Drylander only by the accident of birth," he said. "You've associated with Tritons for so long and lived in and around the sea for so long that you've become a sort of In-Betweener yourself. So why should you shrink from becoming the mother of In-Betweeners?"

"Because in spite of all that you've said, and in spite of everything that I tell myself, I still can't feel sure of anything. How could I be sure that our children were really normal and happy? They could be haunted by all sorts of dark, inexpressible fears and sorrows. How could we know? And what right have we to sentence them to a lifetime in the sort of world that we're in?"

"Did you have secret fears when you were a child?"

"Yes."

"Why didn't you tell someone?"

"I couldn't. My fears were too elusive, and I was afraid of being laughed at if I tried to tell them. Children can't always express what they feel.

"One of my fears was . . . how shall I start? Well, we lived deep down inside Great London, not in an outside wall apartment. Until I was six years old I had never seen the sky, or a sunrise or a sunset. I never went farther from home than the precinct school, three corridors away. Then one day they took my entire class to a children's hostel on the roof, where we could see the Outside. I saw the daytime sky, clouds, the forest, sunrise and sunset, the night sky, the stars, the moon, the Milky Way. There was a thunderstorm while we were there. I had seen it all before, on 3V, but I thought that it was just a sort of make-believe. I could scarcely believe it. I kept thinking to myself, This is *real!* This is *real!* Then we had to go down inside Great London again and I felt that I might as well die. None of the other children seemed to care. Most of them were glad to go back.

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"From then on I was afraid that I'd never see the outside again. I dreamed about it constantly, and I was sure that I'd live and die in the same apartment, a human blob, another polyp in the people-reef.

"I was about fifteen years old when I was sent away to a Bio School in the Cornwall District of Great London, in the Land's End Precinct. There was a promenade deck on the roof that ran along the rim of the city wall for miles, where the wall stands out into the sea like the prow of a ship. I went there whenever I could and watched the Atlantic in fog and sunshine, storm and calm, summer and winter. I knew, the first time that I saw it, that the ocean was my home. I never went back to the old apartment again.

"But, if we have children, what can they do about their fears and sorrows? They'll be In-Betweeners. Where can they go? What can they do?"

Tioru turned Dorthy so that she faced him, placed a hand under her chin and lifted it so that she was looking directly into his eyes and said, "They can be a bridge."

The screen came alive again with the insignia of Prime Center.

It said, "This is the World Communications Co-ordinating Computer at Prime Center transmitting via the Restricted Beam Satellite Circuit. Urgent and Absolute Priority, to Dorthy Sumter, Head, Submarine Products Corporation. We are informed that the asteroid Flavia is on a collision course with the Earth. Efforts to alter Flavia's orbit have produced a slight deflection but not enough to prevent collision. Attempts to fragment the asteroid have been only partly successful. Therefore, you are ordered to report at Prime Center for a Full Council conference within forty-eight hours after the date and hour appearing on the printed confirmatory message which is now being transmitted by Restricted Beam Facsimile. The conference will determine what measures should be taken to prepare for the collision and to handle the disaster conditions that will prevail afterward. We have three weeks to prepare. Repeat—three weeks. End of message. Please acknowledge."

"Message acknowledged and recorded," said the voice of Dorthy's office computer, and the screen became dark.

"Well, thanks for nothing, Prime Center!" exclaimed Dorthy. "After everyone but SPC has been officially notified and we've alerted Great Barrier and all the other Triton colonies around the world, we get a formal, official notice that a disaster's brewing!"

Tioru said, "Forty-eight hours. That's rather short notice."

"Regardless of the short notice, there are two things that I'm going to take care of first," said Dorthy. "Number one: I'm going to fly out

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to Wreck Reef and find out about the trouble with that new strain of slime culture firsthand. Number two: In the same operation I'll go ahead with Project Mile-Deep and try to make it all the way in one dive."

"But you were going to do it gradually, and Chen U said—"

"He said no more tank tests. Very well, I'll stay out of the tank and use the Pacific Ocean instead."

"That's a quibble."

"So I'm a quibbler. But, if and when I go to their Full Council Conference, I want to confront them with an accomplished fact."

Wreck Reef is a lonely little outpost of Great Barrier Reef, about one hundred seventy miles east of its southern extremity. It is the summit of a precipitous, submerged mountain peak, a small drowned plateau, elliptical in shape, with a tiny islet near either end—like the foci of the ellipse. On the easternmost of the two, Bird Islet, stood a cluster of low, domed, hurricane-proof structures anchored deep in the coral by reinforced vitrolith roots. They provided docks, living quarters, and laboratories for the employees of Submarine Products who tended the slime culture one mile offshore and a thousand feet down.

The training barge bearing Dorthy, Tioru, and a crew of Tritons was not built for speed, either horizontal or vertical. Basically it was a forty-foot-square self-propelled submersible raft. Mounted amidship was a spherical steel decompression chamber with multiple gill flanges flaring out from it. Under water the barge could rise, sink, or float suspended at almost constant depth. It had emerged from the atoll encircling Bird Islet and was plowing deliberately toward the rim of the sunken plateau where the bottom dropped off steeply into the depths.

"We've aroused the curiosity of a pair of dolphins," said Tioru, pointing. "Over there to starboard. They seem to be racing each other toward us."

"I think they're convoying something," said Dorthy. "Whatever it is, it's leaving a trail of bubbles between the dolphins. I don't know of anything that moves as fast as that, judging by its bubbles, except a water scooter."

Dorthy's surmise was quickly verified. The scooter surfaced and sped toward the barge, bouncing over the choppy waves and throwing sheets of spray on either side. The people could be seen lying prone on the deck behind its transparent deflector. The little craft slowed, then was obscured as it glided alongside the barge, whose sides rose above it.

A young voice called, "We want to talk to you. Would you mind if we came aboard?"

Dorthy and Tioru exchanged questioning glances, and Dorthy

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said, "Come aboard, and welcome."

There was a murmur of voices, the rattle of a mooring ring, and a young boy scrambled on to the deck of the barge, reached down, and hauled up a Triton girl. Both were reddish-bronze in color and the boy was obviously a hybrid. He had ears as well as antennae but the latter were slender unbranched tentacles about two feet long and in constant motion. They coiled, uncoiled, and quested quiveringly this way and that like the antennae of an insect. His pate was smooth and glistening, devoid of either hair or tubercles.

The Triton girl, like all her sex, appeared to have hair but it was not hair in fact. It was a mass of sentient blue-black filaments which rippled and stirred with semi-independent life. Each filament was tipped with a beadlike light-organ which, seen by daylight, resembled a minute pearl.

Both boy and girl wore utility clothing—as did Dorthy and her companions—of tough, fluorescent orange-yellow plastic as a protection against abrasive coral reefs and the spines and stings of the reef denizens. The Tritons wore shin guards, short boots, and armless, legless swimsuits. Dorthy wore insulated coveralls since she did not have the Tritons' lower sensitivity to the chilly waters into which she intended to descend. None of them wore flippers since they did not intend to make trips away from the barge.

"Who are you? And aren't you a long way from home?" asked Dorthy.

The boy said, "I'm Mokimoki, but I'd rather you'd call me Squid. Squid has a special sound to it and Mokimoki doesn't. And it fits better—on account of my antennae. Everybody says that they're like squid-arms. She's Limpet."

He pointed at the girl.

"Really I'm Numu," said the girl. "Squid calls me Limpet." Then with a touch of pride she added, "Squid has longer antennae than anybody on Great Barrier. You're Dorthy Sumter, aren't you? And you're Tioru."

"Yes, for both of us," said Dorthy. "How old are you?"

"We're both twelve," said Limpet. "And our birthdays are the same. It's Fate, and it means that Squid's supposed to marry me some day."

Squid assumed a bored expression.

Dorthy asked, "Why do you want to talk to us?"

"We want to know if you and Tioru are going to get married," said Limpet eagerly.

For a moment Dorthy became rigid; then she glanced at Tioru, who rubbed his chin and shook his head in bafflement. Dorthy made a helpless gesture and said,

"It hasn't been decided."

"Well, you *should* decide," said Limpet firmly. "You really should. You worry me."

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"Oh, let's talk about something else!" said Squid. "That isn't what *I* came to ask."

Dorthy felt a wave of apprehension. She drew a deep breath and said faintly, "What *did* you come to ask?"

"I want to work for SPC. Can I?"

"What would you do?"

"I could be an ocean-bottom explorer and lead a big Deep Water Safari."

"What would you look for?"

"Prehistoric Tritons."

"Prehistoric Tritons!"

"Yes," said Squid. "I think that millions of years ago there was another race of Drylanders and they all got civilized like now and invented Tritons. Then there was a big war and all the Drylanders were killed except one man and one woman and all the Tritons went down to the bottom of the ocean to get away from the radioactivity and they've been there ever since. So I'd like to go down and see if they're really there."

"Never in all my life—" began Dorthy. Then she said, "Where did you get all these ideas?"

Limpet said, "The part about the prehistoric Drylanders and the big war and the one man and one woman was on 3V. But the part about the prehistoric Tritons Squid thought of by himself. Isn't he brilliant? Nobody but Squid could think of anything like that!"

"Well—!" said Dorthy, paused, collected her thoughts, and continued. "I could never have imagined that so much brashness and imagination could be concentrated in only two people. Certainly both you and SPC can do something for each other. First ask your parents about working for SPC. Then go to Storm's office on Lizard Island. Tell them I sent you. I'll leave word."

Squid and Limpet whooped and dived over the side of the barge. Squid's face reappeared briefly, he said "Thank you!" and disappeared again. Limpet could be heard saying, "Hurry! Let's go and tell the others!"

Then the water scooter was rushing away from the barge, leaving a widening V-shaped wake of foam, convoyed by the two dolphins. It sank lower and lower until scooter and dolphins submerged in a foamy swirl.

For a few moments there was silence on the barge broken only by the steady drone of its motors. Then Dorthy said, "After that shattering experience I can face Project Mile-Deep without a tremor. Let's get on with it."

But she was thinking, "How would I feel if Squid were my son? He's horribly tactless, but so was Limpet. I suppose they'll outgrow that. He's an attractive child nevertheless and certainly not cowed or neurotic. I wonder if he's ever been away from Great Barrier and met an ordinary Drylander? Probably not, he doesn't seem a bit cautious of me."

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The Triton helmsman brought the craft about so that it nosed into the current and adjusted speed until it compensated for the drift.

"Where are we now?" asked Dorthy.

"About one hundred yards out from the drop-off at the rim of the reef," said the helmsman. "The center of the slime-carpet should be straight down under us. The aquaphone operator in the dome says that his sonar indicates that we're almost vertically over him."

"I'm feeling the side effects of my Detoxymoid shot," said Dorthy. "The sunlight's unnaturally brilliant—a white glare. The barge looks as if it were blanketed with snow. Help me with my gear."

The gill components of the deep-dive gear were larger than in the ordinary rig. They projected from her back like semicircular wings. A dome-shaped helmet was placed over her head and connected to the gills. Molded in one piece with it was the face mask, which fitted snugly under her chin and included a built-in nosepiece containing the inhalator tubes that fitted into her nostrils. Telemetry sensors were attached which would enable a Triton medical team on Bird Islet to monitor Dorthy's physical state during the dive.

She said: "As they say on 3V, the moment of truth is here. Submerge."

Air began to escape slowly from the flotation tanks with a soft rumbling sound. Dorthy grasped the handrail in front of her as the deck sank under her feet. Water surged across the deck, rose to her knees, to her waist, to her neck, closed over her head. Now she was afloat in a greenly luminous world, gripping the handrail.

A gurgling curtain of bubbles like pulsating quicksilver spheres and ellipsoids rose all around the barge, then ceased. The barge was now slightly heavier than water and continued to sink slowly. The water was faintly cloudy and the escarpment of the reef, a shadowy dark green wall, was only dimly visible. Minute living specks and sparks swirled and darted in the turbulence above the sinking barge. A school of little fish flashed over the bow, a cloud of ruby-red tinsel flakes. Quivering wave-shadow lines swept across the deck. The green luminosity grew dimmer and dimmer, became bluish. The barge continued its descent with its lights out, keeping its distance from the reef by sonar.

Through the aquaphone contact-transmitters behind her ears Dorthy heard a burst of beeps, whistles, and chirps. This was the sea-voice of the helmsman, originating in the electrical impulses from the nerves and muscles of his vocal apparatus as they went through the motions of silent speech and were picked up by sensors attached to his throat and neck. With training, these sounds could be understood as read-

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ily as normal speech. Over the centuries this means of communication had developed into a language of considerable scope and versatility. It was necessary because the vocal organs of a submerged Triton are full of water and so cannot function as they do in air. The helmsman had announced the depth: "Two hundred feet."

"Hold it," said Dorthy, and her aquaphone throat-mike transmitted her voice to the contact transmitters attached to the helmsman's antennae.

The hover-screws began to whir softly and the barge hung suspended.

Another voice—a normal voice this time, not a sea-voice—sounded in Dorthy's transmitters: "This is Bird Islet. How do you feel? Your blood pressure is up a bit."

Dorthy said, "Excited. Wondering what it will be like deeper down. Not nervous, if that's what you're wondering."

The descent was resumed after a five-minute wait. Down two hundred feet, wait five minutes. Down another two hundred feet.

At eight hundred feet they were sinking through a wonderful, superlative dark blue twilight. Dorthy had seen this before, from a bathyscaphe, but never like this. She felt that her eyeballs and her very brain were saturated by an overwhelming blueness that could never fade. Tioru and his fellow Tritons were surrealistic faceless, limbless figures painted on a field of blue, their invisible heads crowned with domes of luminous silver tubercles and their swimsuits, boots, and shin guards revealed as shapes of orange-yellow phosphorescence.

An enormous form glowing with a flickering green light drifted into Dorthy's field of vision.

"Tioru!" she exclaimed. "Look! Dead ahead of us! The grandfather of all squids! It must be over a hundred feet long!"

"I don't see any squid," Tioru replied. "You're not beginning to hallucinate, I hope."

"You're not looking in the right direction! It's right in front of us!"

She pointed, forgetting that in this dark blue realm with all lights off, Tioru could not see her finger. Then she jerked back her hand with a startled cry. She had touched the squid. It was a tiny thing that had been floating at less than arm's length. Alarmed by her touch, the squidlet went rocketing off into the all-enveloping blue.

"There, I saw it," Tioru said. "It passed within a foot of me. I was looking for something big."

"You *know* it *wasn't* big?"

"I recognized the species. If I hadn't, I might have been fooled, myself."

Dorthy felt a moment of humiliation. She wondered what he was thinking. Would little things like this keep happening all the time if they stayed together?

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A diffused glow lit up the water below the barge, revealing the rugged, almost vertical face of Wreck Reef's understructure astern of the craft.

"They've turned on the floodlights in the culture area," said the helmsman. "In about four minutes we'll be down to the shelf, one thousand and ten feet . . . Someone's calling from the dome. Sounds excited . . . What's that? You've *what?* . . . He says they've lost part of the culture!"

"How does one lose part of a four-acre slime culture?" Dorthy demanded of no one in particular.

She released her grip on the handrail and swam a few strokes beyond the barge, trailing the telemetry cable. Looking down, she saw the slime culture shelf—a natural terrace on the side of Wreck Reef Mountain, brightly lit by a circle of floodlights. The culture was a glistening dark gray carpet with the dome—actually it was a four-legged sphere—standing on an elevation at the center of it. Two Tritons were swimming hastily toward the dome; one of them veered upward toward the barge. Dorthy could see that there was something wrong with the culture; it did look smaller than she remembered it.

The upward-swimming Triton spotted Dorthy and swam toward her, maintaining himself at her level when he was near her. He was wearing a sea-voice communicator—standard practice for Tritons under water. As he was approaching, silhouetted against the diffuse glare of the floodlights, Dorthy recognized his swimming mannerisms and remembered his name.

"What's this about losing part of the culture, Neratino?" said Dorthy.

"It's true," Neratino said. "Little pieces of it have been breaking off around the edges and crawling away. But only a few minutes ago a huge piece—about forty thousand square feet, nearly a fourth of the whole culture—came loose, lifted up, and took off. It just went rippling away like a flying carpet. We tried to hold it but we were left with lumps of slime in our hands."

"What have you been doing about it?"

"We managed to catch most of the little bits that crawled away and sent them up to the lab on Bird Islet. Some of them have been sent to Lizard Island and the Tecto Lab people there are doing a gene analysis to see what went wrong. We're keeping some specimens in aquariums down here and feeding them. They don't hunt food; they just collide with it. If they make contact with a fish, they stick like glue and envelop the fish. Then the slime contracts into a ball for a while. When it crawls away there's nothing left but fishbones and the glob of slime is a little bigger. They'll take crabs, clams, sea anemones, sea jellies—anything. One of the lab men said that we have a Frankenslime to deal with."

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"I agree with that completely," said Dorthy. "We'll have to kill the whole culture. The sea is full of enough hazards as it is. We don't want to add another."

"Check," said Neratino. "Kill slime culture strain C-7."

"But keep all the specimens that you have," said Dorthy. "And take another one—say one hundred pounds—from what still remains. This might be a clue to something useful. We'll have to hunt down the piece that got away. Send out a general warning. Do you know of a good slime killer?"

"Yes. Copper oxyquinolate is deadly to it. We have some in the dome. You'd better charge some of your jet-guns with it in case you see the Sliming Carpet later on in your dive."

"How can we get close enough to shoot it if we do?"

"It can't travel very fast. The barge can out-maneuver it. It won't attack. Just get above it and lower a piece of shark meat into it. We have some for our aquarium pets. When the slime forms a ball around the meat and starts to sink, that's your chance. Follow it and start shooting."

The barge hovered near the dome until the crew had received the promised shark meat and copper oxyquinolate. Then it glided above the slime culture to the edge of the shelf and continued its descent, paralleling the slope of Wreck Reef Mountain, but standing off from it. The barge floodlights were turned on and Dorthy watched the crags and gullies of the declivity as they rose out of the blackness below and vanished into the blackness above, revealing a sparse population of dark red and brown and maroon sea growths, small scurrying crabs, and somberly colored fish.

Down two hundred feet and pause. Down another two hundred feet and pause, over and over. No sound save the humming drone of the barge motors.

Somewhere between the one thousand foot and the two thousand foot levels another broad shelf appeared. Dorthy said, "Lay to here for a while. Douse the lights and stop the motors. I want to look and listen."

The darkness closed in with almost the effect of a physical impact. After her eyes had adjusted themselves she saw that the blue had vanished and become violet, but it was a violet so deep and intense that it was almost black. Or was the violet an illusion? Was the depth pressure affecting her perceptions in some subtle manner? The luminous bodies of swimming creatures were like stars moving in a black-violet sky.

For a time she heard no sound save occasional clicks and snaps—crabs perhaps, or shrimps. Then came a new sound. It was like the dying vibrations of a great bell after it has been struck, a faint deep-

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toned humming that swelled slowly, died away, then swelled again in a regular cycle.

The voice of the telemetry monitor cut in: "Bird Islet here. Is something disturbing you? Your blood pressure and respiration indicate it."

"Probably it's because of a sound that I hear. A faint bell-like sound. Do you hear it?"

"No. We're not linked to your hydrophone circuit."

Tioru spoke: "I hear it but I can't tell you what it is. It's a minor mystery and there have been all sorts of speculations about it. One of them is that it's an amplified Earth-sound. The Earth's always stirring and vibrating internally. Right now we're between the boundary surfaces of two salinity layers and they may form an enormous resonating chamber. Why does it bother you, Dorthy?"

"It . . . well, it makes me think of Big Ben."

"Big Ben? What's that?"

"A huge ancient bell in Great London. It must be a thousand years old. Strictly speaking it isn't the original bell. It cracked several times during the centuries and was melted down and recast each time. It strikes the hours and the sound is piped all over Great London. Everybody has an almost religious feeling toward it. When I was a little girl, I thought that Big Ben was a magic giant who had created the bell, and that he was still lurking in a wizard's cave under the city. And when I was worried because I believed that I would never see the Outside again, I thought that if I tried to run away and escape, Big Ben would know it, come after me and catch me, and take me back."

"Well, I doubt that you'll meet Big Ben down here."

"I can almost doubt that. I'm beginning to have an eerie, anything-can-happen feeling."

"This total darkness brings strange fancies sometimes, even to Tritons. Better turn the lights on again."

The barge continued its downward progress with the lights on. At thirty-three hundred feet a small, grayish-white object zigzagged down out of the upper darkness into the glare of the floodlights and was swallowed up by the lower darkness. Then two more twinkled down and vanished. Something grazed Dorthy's cheek and struck the metal deck of the barge with a sharp clink. She swam down to it, picked it up. It was a shark's tooth. Its size indicated that it had belonged to a good-sized shark. Then there was a rapid tattoo of clinks all over the barge, and sea-voice exclamations from the crew.

Someone cried, "It's raining shark's teeth!"

Then came a hailstorm of small fish bones.

A frightening realization dawned upon Dorthy. She looked upward

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and saw, poised about thirty feet above, a circular, gently undulating canopy of dark gray material. It sagged in the center. At the moment its diameter was about twice the width of the barge, but it was gradually expanding horizontally in all directions.

"There's our Flying Carpet culture right over our heads," she called loudly with a quiver of repugnance in her voice. "It must have just finished digesting a shark. And a school of fish. Now it's flattening out again."

The helmsman said agitatedly, "It's following us down at the same rate that we're sinking. It keeps a constant distance. Neratino said that it doesn't hunt food."

"I don't think it's following us," Tioru said. "More likely it's being sucked down by the turbulence in the wake of our sinking. But we'd better move out and get over it. If by chance it caught up with us we might become its second course."

By the time this maneuver was completed the slime carpet had expanded into a disk almost three hundred feet in diameter and was leisurely rippling on an erratic course. The barge cautiously descended to within about forty feet of the disk and the slab of shark meat was lowered on the end of a line. The slime-disk adhered to the slab on contact, ceased its rippling motion, began to stream inward toward the meat, enveloped it, and finally concentrated itself into a roughly spherical mass about twenty feet in diameter. The mass began to sink slowly, agitated by slow internal heavings and writhings which threw its surface into ever-changing convolutions and furrows.

The barge crew opened fire with their jet guns at a distance of ten feet. The guns expelled rapid bursts of long pencil-thin slugs of blue-green liquid. The slugs were ejected under such high pressure that they traversed the water with very little diffusion and penetrated the slime globe.

The globe convulsed. Short pseudopods as thick as a human torso extruded and retracted. Fissures opened and closed like gasping mouths, emitting bubbles of gas. Pallid white blotches appeared, spread, and coalesced until the entire mass was a greenish fish-belly white. Then disintegration began. Ropes and tattered white films separated from the sinking mass and themselves disintegrated into dissolving white strings. The partly digested chunk of shark meat fell out and dropped into the nether darkness. Soon only a tangle of white shreds remained, which in turn dissolved and vanished.

Dorthy covered her face mask with her hands and floated, shuddering. She was anchored to the barge by the telemetry cable. She could still see the dying agonies of the slime-ball, like the death of a brain.

"Are you all right?" the Bird Is-

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let liaison monitor asked anxiously. "Do you wish to end the dive? What's going on?"

"I'll be all right in a moment. This is what happened," said Dorthy, and described the killing of the runaway culture.

The barge resumed its methodical descent. Thirty-eight hundred feet. Four thousand. Forty-two hundred. Forty-three . . .

"Five thousand!" cried the helmsman. "We did it!"

"Does the sonar show a level place where we can put down, not too far below?" asked Dorthy.

"There seems to be a ledge at about fifty-three hundred," said the helmsman. "I don't know how big it is."

"Let's go down and have a look. That will be just a bit more than a mile. I want to leave the barge and actually stand on the bottom at one mile down."

The words kept repeating themselves in her mind: "One mile. One mile down. One mile. One mile down."

The ledge that the helmsman had mentioned proved to be a triangular promontory jutting from the flank of Wreck Reef Mountain. Dorthy watched it as it emerged into the illumination of the floodlights.

The barge drifted down upon the promontory, bounced lightly, and came to rest. Dorthy swam over the edge of the barge, then downward with her hands extended. When they contacted the promontory's surface she found it covered with a compact silt. She withdrew her hands and contemplated the two hand prints that she had made; then reversed her position and made two footprints. She floated above the prints and gazed at them. Tioru swam down and floated beside her.

"In all the billions of years since the seas were formed," said Dorthy, "there never have been human handprints or footprints in the ooze this far down. This isn't at all like making a dive in a bathyscaphe. In a scaphe one's in a little world of one's own, a detached observer. Here I'm exposed, naked—the coveralls don't count—with tons upon tons of depth pressure bearing down upon me. But I don't actually feel it. It's as if I were a phantom. It's frightening. I hadn't expected this."

"Strange," Tioru said. "To me, the deeps are places of peace, serenity, beauty. Places for meditation."

Another difference. How many other differences are there? It's almost as if they really were another race. She said: "Douse the lights again. I want to see this as it looks to . . . to the fishes."

Again there was the sense of near-physical impact as the blackness engulfed her; then the gradual emergence of the black-violet texture. Then she could see that the silt layer that covered the promon-

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tory, as well as the face of the cliff from which it projected, was clothed with the pastel blue glow of a bacterial film. As her vision grew more discriminating it became a dim tapestry of many tints—indigo, sapphire, violet, aquamarine. A swarm of yellow-green luminous dots drifted across it like languid fireflies. She had seen this bacterial glow before, during bathyscaphe dives, and had admired the delicate colors. But now the beauty was gone; it was alien and ghostly.

A small mad-goblin thought whispered in her brain: "You're going to pieces. You're going to panic." No, she told herself. This is something I have to conquer. I'm scared because it's a totally new experience. I'll be all right. Go away.

But the goblin-thought did not go away. The feeling of panic was like a quivering mass in the pit of her stomach. It was rising up into her throat.

She heard a sound, a sound as of ponderous footfalls far away . . . *thud . . . thud . . . thud . . .*

"Tioru," she cried, and her voice was high and thin, quite unlike her own. "Do you hear that? Something walking! Something walking on the bottom of the sea! Listen, listen!"

"I do hear something," he said, with controlled gentleness. "The sound of my own pulse in my ears. Just as you hear yours. There's no other sound to distract you—that's why you notice it."

"It can't be! It's too loud! It's something huge—coming toward us!"

She was horrified to find herself screaming inside her face mask. But she could not stop.

The mad-goblin thought whispered again. But the footfalls were louder. They were the steps of the Terror of the Deeps—the black behemoth that walked the ocean floor.

Thud-thud . . . thud-thud . . . The footfalls were more rapid now. In a whirl of terror she tried to remember something, something about a bell and a malevolent giant. She was trapped. There were thousands of feet and millions of tons of water over her head, a whole world of blackness that was pressing down to enfold and crush her.

That high voice was still screaming: "We'll never get back to the surface! We'll die down here! We'll never see the sky again! Never, never!"

She heard Tioru's sea-code voice. "Lights here! Give me a hand!" And then that was all.

Dorthy lay with her eyes closed. She no longer cared where she was. She was aware of a padded surface beneath her, the throbbing of a motor somewhere, two voices conversing quietly. Her diving gear had been removed, but she could feel the telemetry sensors still attached to her. Someone was firmly clasping her left hand.

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She opened her eyes and looked up at a sea-green domed ceiling with a luminous disk at the apex of the vault. Only then did she realize that she was in the decompression chamber on the barge.

Tioru's face bent over her, filled with tenderness and concern.

"What's the matter? Why am I here?"

"We thought it'd be better to revive you in here, rather than outside. We're on our way up. Another five hundred feet or so and we'll be at the surface."

To her amazement, she began to weep.

"Look at me, Tioru!" she sobbed. "I'm hopeless! I'm no good at anything! I can't even control my emotions. I was going to do so much—for us, for everybody—and I flubbed it!"

"No, love. You set out to make a one-mile dive, and you did. As far as we can tell, you're none the worse for it, except for a flash of panic. Your only mistake was in trying to go too far in one dive. Naturally it overwhelmed you. Later on, we can start again and do it the way you first planned it, step by step."

"No! It won't work! Nothing will work! Oh, Tioru, don't you understand? Nothing at all!"

He only waited. After a while she said, more quietly: "I have to go to Prime Center and tell them. And I . . . I'm not coming back. I'm finished. Everything's finished."

"No, it's not," Tioru said. "I'm going with you."

"No, no!"

"Why not? I'm your deputy—and I love you."

And so it had at last been said. Sighing, Dorthy gave in.

It was surprisingly easy.

II

Tioru's decision did not produce anything like the emotional upheaval in Dorthy that he had expected. She said, after a long silence: "If you come with me, where would you live?"

"Ashore for a while, of course. In a Dryland city."

"Away from the sea? You couldn't endure it!"

"How can I be sure of that?" he said. "I'll never know if I don't try. I know the Triton way of living. I think I ought to know something, firsthand, about the Dryland way."

"What would that solve? We'd still have the same old argument."

"If there's a solution, we won't find it half a world apart."

"I suppose that's true," she said. "Where would you live, then?"

"Philadelphia, I suppose. It's only fifteen minutes from Prime Center by local jet."

"Philadelphia! That's another people-reef, like Great London! More than half a billion. You'd feel smothered!"

"Maybe not, I'll ask for an outside apartment. And a pool bath."

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"Not a chance, dear. You could wait for years before you got one. Just make a reservation for an apartment, period, and take whatever they offer. You'll be lucky if they have a vacancy. Your job status may help a little—but don't count on it."

"Whatever you say. You're the Drylander."

Dorthy winced slightly.

"I'll stop off with you in the city . . . and steer you around till you're settled."

While they were riding the eastbound strip of Philadelphia's Corridor 29 the stream of people on the westbound strip stared at Tioru with wide-eyed curiosity, some even a little fearfully. A transparent wall, inlaid with a pattern of flowering vines in colored enamel, separated the two strips. He became increasingly aware of a taste-smell quality in the air that he had noticed as soon as they had entered Johannesburg from the flyport. It was the aroma of people. It was not nauseating, or disgusting, but it was unpleasant—a humid, sickly, oily odor—the odor of oils present on even well-bathed skins—plus a whiff of perfumed antiseptic. Out in the open, in the presence of small numbers of people, it was negligible. Here it was concentrated. The total effect was oppressive, as if the multimillions above, below, and around him were almost tangibly present.

When they opened the door of Apartment 203 they were confronted by a picture window on the opposite side of the living room, giving a view into the foliage of a forest of giant tectogenetic poplars. The leaves were stirring in a light breeze. The window was about twenty-five feet above ground level; that is to say, above the level of the soil on the roof of the next lower setback of the city-structure.

"An outside apartment!" said Dorthy. "You're in luck."

The voice of the apartment computer spoke from a grill in the ceiling:

"Welcome to Apartment 203. Everything is in order. Is there anything you wish?"

"No," Tioru said, walking toward the window. His back ached, and he needed a swim. He was beginning to feel dehydrated.

Then he saw a sparkle of water between the moving poplar leaves. Suddenly he felt much better.

"Water! There's a stream out there! Can we open the window and get out for a minute?"

"No. That stream is a rain sluice," Dorthy said indulgently. "There must have been a shower, just before we arrived."

"Oh. Do you think there's a pool bath here?"

"Not likely, I'm afraid. Maybe a shower stall."

This proved to be true: there was nothing but a small, windowless bedroom and a multiple-jet stall

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about the size of a closet. Tioru said nothing, but in his heart he was appalled. He had once tried a shower stall in the Barrier-hilthon. The needle sprays had forced water into his gill slits, the spray had reeked of detergent, the rinse had been choking with antiseptic. The bed did not look much more inviting; he had been accustomed all his life to sleeping afloat, and the flat white object before him now made him ache prospectively in muscles that he hadn't realized that he had.

Dorthy watched him with a mixture of indulgence and anxiety. He tried to smile. He said cautiously: "Could I exchange this apartment for one with a pool—or have one installed?"

"Maybe, since you have a job," she said dubiously. "I'll ask, anyhow. Query to computer: Do any of the apartments in this city have pool baths?"

The computer said promptly: "I have no information regarding pool baths, or the furnishings of other apartments. For further information, call Tenants' Services."

Dorthy said something ungentle under her breath and passed the vidphone handset to Tioru. He, too, was answered by a computer, of course; but this one was a little more polite, since his voice pattern had been recorded and filed by the Apartments Applications Bureau. He said tentatively:

"This apartment doesn't have a pool bath. May I exchange it for one that does, or have one installed?"

"No, sir," the computer said, in a voice like a motherly oboe.

"Why not?"

"Pool baths have been obsolete for generations. They waste water and space, and are prohibited under the Revised Building Code. Your shower is controlled by the Apartment Computer, which has a directive from the Master Municipal Computer to supply you with a metered quantity of water daily. You may schedule the number and duration of showers to suit your convenience, with the manual controls. If you avail yourself of less than the metered amount per day the unused ration will not be carried over to any succeeding day."

"Who is the person in charge of Tenants' Services?"

"Thaniel Brewster."

"May I speak to Thaniel Brewster?"

"Why do you wish to speak to him?"

"To ask regarding a pool bath."

"Nothing else?"

"No."

"Then you may not speak to him. I have already answered your questions. I have a strict directive not to refer any inquiries to Brewster which I am capable of answering. That is all."

There was a *ping* as Thaniel Brewster's computer broke the connection.

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"It seems that we can't break through Brewster's electronic curtain," Tioru said.

"I think I can break it," said Dorthy. "Are there any writing materials here?"

A search of the apartment turned up two sheets of sketch paper and a drawing pencil.

"Now," said Dorthy, "I'll write Thaniel Brewster a note of inquiry, sign it with my official title, and send it to him as a parcel."

Puzzled, Tioru said, "What will that accomplish?"

"I'm not quite sure," said Dorthy, "but I think he'll make a person-to-person call."

After dispatching the note addressed to Thaniel Brewster in a cylinder coded to Tenants' Services, through the parcel conveyor tube, Dorthy said, "Now we'll see what's to be had from the autoserver, and wait."

About one hour later while they were sipping kaffina, the vidphone chimed, the screen lit up, and disclosed a man's face—gaunt and deeply lined and topped by a close-clipped fuzz of bristly hair. He was obviously flustered. He looked at Dorthy and said, "I'm Brewster. I take it that you're Dorthy Sumter. Why did you send me this blasted handwritten letter?"

"Because we couldn't get through to you any other way."

"Well, you've got through. Also you've thrown my entire office into an uproar. Don't you realize that we have no equipment for processing, or filing, a communication of this nature without resorting to unconventional routines? Our operations are geared exclusively to sound recordings and Universal Phonetic Print on standard message tape. I've been working here for thirty-seven years and not a soul in this office, including myself, has ever seen a handwritten letter in script. Only two people on my staff can read script. What are you? Some kind of antiquarian? Now what's this nonsense about a pool bath?"

"It's for me," said Tioru. "I'm a Triton, as you can see."

"But I don't see. Tritons have scales and fins, don't they?"

Dorthy said, "I've been associated with Submarine Products Corporation and with the Tritons for many years and I can assure you that they have neither scales nor fins. Tioru *is* a Triton. Did you ever see a Drylander with antennae?"

"No. So I was mistaken. I'm sorry about the pool bath but it's out of the question. It's illegal to begin with, and if we start making exceptions we'll be stuck with an endless round of remodeling apartments."

"Well, then," said Tioru, "how about giving me a permit to swim an hour or two every day in your reservoir?"

Brewster looked shocked. "Swim in the reservoir? Certainly **not!** There's an ordinance against it!"

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Tioru said, "I'm not making this request just because I enjoy swimming. To me, periodic total immersion is a physiological necessity. If I'm denied it for too long a time, the results could be serious."

Tioru could almost see Brewster's mind shifting gears. He said, "I'll see what I can do. I'll let you know."

After Brewster had switched off, Tioru said, "At least there's a glimmer of hope. Dorthy, that was an inspiration. Perhaps tomorrow I can swim again. In the meantime I'll have to settle for a shower, like it or not."

"Have fun," Dorthy said. "I've got to go to Prime Center. I don't know just when the meeting will be called but I want to be there when it is. I'm sure that it will be an ordeal—for me—and the sooner I get it over with the better."

The following morning Tioru received, via facsimile transcriber, a permit to swim in the reservoir for one hour daily. But there was a condition attached: he would be accompanied to and from the lake by an escort of six uniformed bodyguards. The reason for this was not to protect him from possible physical violence, it was explained, but because he would be an object of great curiosity, and since he was a transient visitor the citizens would not regard him as protected by the usual rules of etiquette regarding invasion of privacy. He might easily become the center of a throng of inquisitive people eager to bombard him with annoying personal questions.

The arrival of his escort of six Precinct Guards was announced by the apartment computer, which was connected to a watchful electric eye in the corridor. After asking Tioru's permission it opened the door. The guards were uniformed in berets, tunics, flaring knee-breeches, and half length boots of silvery material that flashed and glittered like metal. For a moment Tioru thought that they were clad in armor. They fell into two triangular formations of three—one ahead of Tioru, the other behind. As they were borne along on the moving floor strip in the corridor Tioru felt uncomfortably self-conscious.

"This is silly," he thought. "I feel like a parade."

There were people ahead of him on the same strip who kept turning their heads to look. Others turned around and rode the strip backwards, staring openly. Tioru heard a steadily-increasing murmur of voices behind him and looked over his shoulder. He had acquired a close-packed following of, he estimated, one hundred people and the number was steadily augmented by others emerging from apartments along the way.

He overheard snatches of conversation: "He doesn't look like a Triton . . . What did you expect? Don't you watch 3V? . . . What

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are those things on his head? . . . I didn't know they could live out of water . . . Does he speak our language or does he squeak like a dolphin? . . . They eat seaweed, don't they?"

The transparent partition that separated him from the people on the oppositely-moving strip prevented him from hearing what they were saying, but he could see their lips moving and their heads all turning in unison as they passed him. At the intersections with the cross-corridors, where the moving floors were interrupted to permit interchanging, there were small crowds, all agog, waiting on the stationary squares.

"How did they know we were coming?" Tioru asked a guard.

The guard shrugged.

"Friends down the corridor behind us phoned ahead and told them," he said. "You'd be surprised how fast word gets around. Next to watching 3V, talking on the vidphone probably is the world's favorite pastime."

They arrived at an elevator lobby. Two more guards stood before the open doors of one of the elevators. They stood aside while Tioru and his escort entered, then came in behind them.

"Now it's eight guards," thought Tioru. "The permit said six. Oh well . . ."

After a long plunge—too long for Tioru—the doors opened and revealed two more guards.

"Ten!" exclaimed Tioru involuntarily.

"You spoke?" said one of the guards.

"It's nothing," said Tioru. "Disregard it."

But he was thinking: "What goes on here? If I accumulate any more guards it *will* be a parade."

From the elevator they stepped into an arcade two hundred feet wide and high, with a luminous vaulted ceiling. Here was the Precinct center for distribution of commodities, the Precinct medical center, the crematorium receiving station, the air-conditioning plant, Guard headquarters, cosmeticians' salons, fortune-telling robots, electronic games. The moving floors were twenty feet wide and crowded with people. Between the moving floors lay a wide strip of greensward. At intervals down its middle were huge blue ceramic bowls containing flower beds from whose centers rose latticework columns of black metal, forked at the top like a letter Y. Giant philodendrons with leaves as big as elephants' ears climbed the columns. But in all this greenery there was not a single living plant. They were plastic flowers, plastic grass, plastic philodendrons.

The oily, faintly perfumed aroma of people hampered Tioru's breathing; it was like the light steady pressure of an elastic band around his chest. He was grateful when they left the arcade and came into

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the open air on a promenade along the top of the city's outer wall where it formed a dam across the reservoir. The towering figures of great tawny lions molded in vitrolith sat stiffly erect at regular intervals along the parapet of the promenade. A helicopter was standing on the promenade, its rotors idling. A crowd of spectators had gathered.

"We're going to fly you part way up the reservoir and put you off," said the Guard captain. "It's dangerous at this end on account of the intakes for the hydroelectric plant. The copter will cruise around in your vicinity until your hour is up. If you want to be picked up before then, surface and wave. The co-pilot will be watching for you with binoculars."

When the helicopter had flown several miles the pilot brought it down to within a few feet of the water, near the shore. Tioru slipped on a headband bearing a forehead spotlight, dived in, submerged, and inhaled deeply. At last he was waterborne again. The water tasted flat like the water in a rain sluice, but with an additional bitter flavor.

He was curious to see what kinds of life he might find and set out on a tour of exploration. The side of the reservoir was a wall of smooth gray material; he presumed it was vitrolith. Nothing was growing on it; not even a patch of green algae. He found a few spots that were slimy to the touch.

He followed the wall down until he reached bottom. He judged it to be about two hundred feet below the surface. It was covered by a layer of gray silt that showed no signs of life—no burrows, no worm tracks, no algae.

It was dim and green on the bottom, but his headlamp allowed him to see clearly for about twenty feet. It dawned upon him that he had seen no fishes. Where were the fishes? He swam up and down, back and forth. No fishes.

This fishless condition did not indicate that the World State disapproved of fresh-water fishes. It was simply the inevitable condition that had resulted when the World State confined all of the world's wildlife in the Biological Preserves and substituted the highly artificial ecology of the World Forest, devoid of all fauna other than soil organisms.

"If there's anything living in this water," thought Tioru, "it must be microscopic. The place is sterile. It's a place of Death."

He sculled along near the bottom, shining his light on the smooth gray silt, occasionally flashing it ahead. It was depressing. He was accustomed to the teeming vitality of the reefs. Then he saw a wavering movement ahead.

As he drew nearer he saw what appeared to be a clump of dark-colored algae, swaying gently. It was attached to one end of an elongated dark object lying on the bottom.

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He started to swim closer, then recoiled. There was a new taste in the water. It was not unknown to him; he had encountered it before when he had killed sharks or scraped himself on sharp coral. It was the taste of blood.

Shuddering, he resumed swimming toward the dark object, directing his light toward it. Now he could see what it was—the prostrate body of a young woman in the green uniform of a Forest Ranger.

Her feet were tied together and attached to a cube of some dark material. The front of her uniform was all one great dark stain and there were slashes in the fabric over her breasts. Her face was white and calm with a marble immobility, her eyes were open, and her dark hair floated in the water like black seaweed.

Tioru kicked against the bottom, launched himself upward, and surfaced. He looked about, spotted the circling helicopter, and waved until he saw an arm wave in acknowledgment. The helicopter veered toward him.

While he was clambering aboard the helicopter he said, "Get a fix on this spot! There's the body of a woman down there with a weight tied to her feet!"

Tioru stared moodily and unseeingly at the 3V screen in his apartment, oblivious to the news program then in progress. He was still shaken by his experience in the reservoir and could not turn his thoughts away from it. He had been minutely questioned about the body of the girl, a squad of Precinct Guards with scuba gear had been sent to recover it, and both he and the helicopter pilots had been ordered to talk to no one about the discovery until the killer was in custody.

The news commentator's words caught his attention; ". . . Distinguished visitors from Great Barrier Reef."

"That must mean Dorthy and me!" thought Tioru, becoming alert and leaning forward to watch, and in that instant the scene changed. He was looking at the promenade and its parapet with the vitrolith lions overlooking the reservoir. He saw himself with his escort of guards emerging from the arcade and marching toward the helicopter. He was marching in step with the guards; he hadn't been aware of it at the time. He watched himself enter the helicopter and take off.

The commentator explained that Tioru had been granted permission to swim in the reservoir "for reasons of health." *Flick!* The scene changed again, showing the returning helicopter, then Tioru climbing out and reentering the arcade with the two pilots. All three of them were surrounded by an augmented bodyguard.

"I wasn't marching in step then," thought Tioru as he saw himself stumble twice.

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The commentator passed on to other matters. No mention of the body in the reservoir. Evidently the hunt for the killer was still on.

Tioru turned off the screen and stood up. "No use in staying up all night," he said aloud. It relieved his solitude somewhat.

Tioru prepared for a shower by inhaling water from the drinking fountain in the bathroom until he had filled his gill cavity. Then he entered the shower stall, turned on the cleansing shower, and ejected water from his gill slits while the shower was running. This prevented the detergent-laden needle jets from injecting themselves into the slits. He repeated the operation during the antiseptic rinse, then waited for the drying whirl-blast of warm air. Then he stepped out of the shower, stretched himself on the bed and said, "Lights out."

The computer obediently plunged the apartment into total darkness.

"Correction!" said Tioru hastily. "Turn on two percent of full."

A faint glow filled the apartment and Tioru closed his eyes.

But sleep did not come quickly. He kept seeing the body of the girl in the dim greenness of the reservoir, the pallid mask of her face, the gently waving cloud of dark hair, the great stain on her uniform.

When he did fall asleep he was bedeviled by a nightmare. He was swimming madly through an endless green twilight of water, without top, without bottom, pursued by a bodiless, expressionless white face with a trailing streamer of black hair like the tail of a comet. Then two faces, three, four, five, ten, a hundred, a veritable swarm of hounding white-faced Furies. He had some sort of gun in his hand which he fired at them. It discharged with a strange staccato noise like the slamming impact of metal on metal. He awoke and sat up with a start, sweating, his heart pounding violently. He had an odd feeling that the noise had been in the apartment. Had something fallen? Or broken? It seemed unlikely.

He said, "Lights on full."

The lights came on and he prowled the apartment looking for the source of the noise. Then it occurred to him that the computer would have recorded it if there had actually been a noise.

Tioru said, "Query to computer: Was there a loud noise just now?"

"Yes."

"What caused it?"

"A man in the corridor stepped off the moving strip at your door, struck the door with a metal bar, and continued on his way."

"Are you sure it was not a child?"

"It appeared to be an adult."

"Any other people about?"

"Yes."

"Did they try to stop him?"

"No."

"It's senseless!" said Tioru. The computer offered no comment.

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He returned to bed, ordered the lights turned down, and tried to sleep again. But now he was wide awake, his thoughts circling futilely around the puzzle of the blow on his door.

Then the vidphone chimed. Tioru groaned, ordered the lights on again, got up, and walked back to the living room. When he ordered the screen on it displayed the frowning face of a young girl.

She cried shrilly, "I know who you are, you snooper! You're Tioru the Triton! Snooper! Snooper! Snooper!"

"Wait!" cried Tioru as the screen went dark. How had she traced him? The 3V news broadcast! That had identified him. But his vidphone code? How could she know that? Then another memory came to him. One of his bodyguardsmen had said, "You'd be surprised how fast word gets around . . ."

Tioru thought, "Scores of people must have seen me come out of Apartment 203. With six bodyguards how could they fail to notice? Then the vidphones must have started to ring up and down Corridor 29. Within minutes most of the people along the corridor must have known about me, the peculiar stranger in Apartment 203. It spread from there."

He sighed and returned to bed, ordered the lights turned down. He had scarcely settled himself when the vidphone chimed again. He rose wearily, ordered on the lights, and walked to the vidphone muttering, "Enough of this! I'll put a stop to it right now!"

This time it was a bearded man who merely shouted, "Killer!" and vanished. At the same time something whacked twice against his door.

Tioru switched the vidphone to Incoming Recording, then called Tenants' Services and reported what had happened. He was surprised to find himself talking to a man, not a computer.

"We've been expecting to hear from you," the man said. "We know the facts in the case and are sorry that you're being bothered. We've received several hundred complaints about the Killer Triton. We were hoping that no one would ferret out your vidphone code. I'll have a screening and tracing computer put on your line and no more nuisance calls will be allowed to come through. The Precinct Guard will station two men outside of your door."

After this Tioru was not disturbed again; but he awoke once during the night and thought that he heard the remote, hollow sound of many shouting voices coming out of the bedroom ventilator.

Corridor 29 was deserted when his bodyguard arrived the next day to escort him to the helicopter. All tenants of the corridor had been ordered to stay inside and to keep their doors closed. There were no

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crowds at the cross-corridors, nor in the elevator lobby.

On his way down in the elevator Tioru almost decided to tell the guards that he did not wish to swim in the reservoir. It had lost its charm after his grisly discovery of the day before.

When the elevator doors opened on the arcade of the Precinct Center they revealed a milling crowd of thousands of people. Phalanxes of the silver-uniformed Precinct Guard were maintaining an open lane between the elevator and the doors at the end of the arcade. As soon as the crowd saw Tioru he was greeted by an angry roar punctuated by shouts and screams. They began to throw things. A pulpy mass with a fruity aroma splattered against Tioru's forehead and its juice trickled down over his face. He began to distinguish individual voices in the midst of the uproar.

"Kill the slimy Triton!"

"Smash his ugly face!"

"Murderer!"

"Bash his head in!"

A woman's voice rose piercingly above all the others: "Kill 'im! Kill 'im! Kill 'im!"

The arcade became filled with a flickering white play of blinding white flashes. They were so intense that they erased all color and temporarily reduced the scene to a study in garish black and white. They seemed to emanate from slender cylindrical weapons wielded by the guards. The ranks of the guards began to give way before the pressure of the mob. Several people broke through but were thrown back.

Tioru closed his eyes against the coruscating brilliance and saw a pattern of green afterimages. He had received an impression that the guards were wearing gas masks and dark goggles. Someone entered the elevator, the door closed, and the tumult became inaudible.

Tioru opened his eyes. The newcomer was a captain of the Precinct Guard. He said to Tioru's escort:

"Stay in the elevator and go down to the next level. Go through the service tunnel and come up the escalator near the copter. We've stopped the floors. We're going to use knockout gas as soon as the airflow is shut off. We don't want to gas the whole precinct. We can't hold this mob much longer with shockprods and blinderflashes."

"What's going on?" asked Tioru. "They were shouting Murderer!"

"You'll be told after you're in the copter. And you can't go back to your apartment. There's another riot up there now. Get moving!"

The escalator from the service tunnel delivered Tioru and his guards to an exit in the hollow pedestal of one of the lions on the parapet of the promenade. The helicopter was only a few steps away. People were staggering out of the exit from the arcade and collapsing on the pavement. A few had escaped the knockout gas and were

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fleeing down the promenade, but were being pursued and rounded up by guards on miniscooters who were coming out of the pedestals of the lions.

After he had boarded the helicopter and was in the air, Tioru said to the pilot, "Now, please tell me what all that uproar was about."

The pilot said, "Last night we traced the killer of the girl—the one you discovered in the reservoir. He was easy to find—a Forest Ranger who shared a patrol area with the girl. The motive was jealousy. The stabbing was a clumsy job; he never touched a vital organ. The girl bled to death. It happened about the same time that you and Chairwoman Sumter were miles away. The next day, when the girl's lover heard that you were diving in the reservoir he panicked and committed suicide. But he taped a confession first. The whole thing went on the air."

Tioru said, "But where do I fit in?"

"It's like this. You and the Chairwoman were in the city when the girl was killed. At one o'clock in the morning Chairwoman Sumter caught a plane to Prime Center, leaving you the scapegoat."

"They think that Dorthy and I—!"

"In a city this size, with most of half a billion people on the dole and with nothing in their heads, they invent things to get stirred up about. The taped confession is a fake. You got a special permit to swim in the reservoir, and the rumor-factory has it that the reason for that was to allow you to pretend to find the body."

"It's crazy."

"Sure it is. But we were charging around all night breaking up demonstrations after the murder story went on the air. First it was just marching and shouting, but it got worse. The riot you saw didn't begin until after you left your apartment this morning."

"Great," Tioru said. "Just great. Where do I go now?"

"Well, I doubt that you want to go swimming."

"No," Tioru said. "I don't even want to go near the reservoir, after finding . . . I just want to go somewhere to rest and think. But where would that be? It wouldn't be safe to go back to the apartment, I suppose."

"Correct. It would not. But we have a safe place all ready for you. There's a new five-mega-unit addition almost completed and you'll have it all to yourself except for the technicians. They're still checking and testing everything. One unit has been turned on for you, complete, and you can stay there until the facts catch up with the rumors."

"I'll be isolated, in the middle of five million vacant apartments?"

"Right. How much safer can you be?"

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Tioru was guided to his new apartment by the guardsman-pilot of the helicopter. Technicians were still at work on the corridor floor strips. Tioru and his guide were forced to walk part of the way.

Although all the electrical equipment in Tioru's apartment had been turned on, electricians kept coming and going, checking circuits and making final adjustments. They warned him that some of the equipment might not operate normally for several days to come.

The apartment was high in the uppermost tier of the city and its window commanded a view across the forested roof, studded with square pyramidal terraced mesas, each one crowned by a flyport. Tioru glanced listlessly at this panorama. He felt drained of emotion.

After showering perfunctorily he lay on the bed in a state of apathetic gloom, not bothering to order on the lights when the twilight gathered and deepened. He was dully aware of scrapings, clinks and tappings between the walls, overhead, under the floor. He reflected that the technicians probably worked night and day, in shifts. The city grew; that was its first law.

He became alert when he heard the corridor door slide open, squeaking. That squeak would have to be fixed. When he ordered the lights on full they responded with only a dim glow. Another adjustment to be made!

He groped his way into the living room. Here the window admitted considerable illumination from the distant flyports, now sparkling with lights. The door into the corridor was visible as a black rectangle. He went to it, looked into the yawning dark cavern of the corridor and called, "Hello! Anybody there?"

His voice reverberated down miles of corridors, an eerie diminuendo echo, "Anybodythereanybodythereanybodythere?"

Tioru shivered and hopefully ordered the computer to close the door. There was a brief hum. The door squeaked, trembled for a moment, but remained open. He returned to the bedroom, stretched himself on the bed, sighed, and closed his eyes.

The thought of the black rectangle of the open door kept nagging him. It made him uneasy. Long-dormant childhood fantasies rose from the depths of his memory, trailing after them vestiges of the deeper primordial fear of prowling nocturnal carnivores. He felt that there were ambiguous presences lurking in the blackness of the corridor, waiting to steal in on noiseless feet. Not people, but Things: shadowy gray, long-bodied, four-legged, squint-eyed Things That Bite. Was that a stealthy rustling in the living room? He became rigid, held his breath.

The multiple sprays in the shower stall came on of their own accord with explosive force. Tioru sprang from the bed with a cry of

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terror, then stood in the center of the room quivering with nervous shock while the shower completed its cycle. When he had recovered his composure he sat on the edge of the bed with his head in his hands.

This jumpiness was insane. People lived safely all their lives in apartments like this . . .

From somewhere came a subdued, velvet-smooth, mechanical whir. Then he realized what it was. The corridor floor strips were moving!

He returned to the open door and looked into the corridor. Far away on the left he could see a light. The lights were on in a cross-corridor. Then the corridor in front of him lit up for as far as he could see—two brightly-lit, empty perspectives of identical doors facing each other, divided by the central transparent partition with enamel inlay, converging to a vanishing point in either direction.

There was a distant murmur of voices. Two people emerged from a remote cross-corridor and were carried toward him on the floor strip. They were merely two minute figures; he could make out no details.

The lights in the corridor went out again but came on full in Tioru's apartment.

"Blast this circuit-testing!" he thought. "When will they be done with it?"

It had seemed to him that when the corridor lights went out he had heard a startled cry, diminished by distance. It had a feminine quality, he thought, but he wasn't sure. He listened intently. He could still hear the murmur of voices, closer now. Then a few words floated down the corridor, blurred by echoes; "I see a lighted door. That must be Tioru's apartment."

Dorthy!

"I'm here!" he shouted. "It's me, Tioru! Where you see the light!"

She called something in reply but the echoes turned them into nonsense. He heard the sound of running. Moments later Dorthy burst through the door and was in his arms.

After a bit she said, "What have they been doing to you? I had to come back . . . The guard—he's back there somewhere—said they had to snatch you away from a mob!"

"I've been living from shock to shock. I'm as out of place here as a dolphin on top of Mount Everest. You were right. Triton and Drylander can't mix."

"Tioru! That isn't the way you talked to me on Great Barrier!"

"I was ignorant. I was wrong."

"Then you don't love me after all," she said dully.

"I . . . didn't say that. I didn't mean that. Unfortunately for both of us, I do still love you. But there's nothing we can do about it. We're licked, Dorthy."

Someone coughed discreetly. A

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guardsman was standing in the doorway.

He said, "Is there anything further I can do for you?"

"No . . . nor anybody," Tioru said. "Good-bye, Dorthy. I'm sorry, but . . . we've got to face up to it. I'm taking the next plane out."

There was a long pause.

"Perhaps that is the best thing," Dorthy said at last. "Things may look different when you're back on the reefs. Listen, I have an idea. I'm going to Great Inagua in the Bahamas. Why don't you come, too? The sea is there . . . and I still need you, Tioru. Unless you want to resign—"

"No . . . no, of course not," Tioru said, fighting against hope. "All right. How do we get a plane to Great Inagua?"

For the first time in the new apartment, the computer spoke. It said: "For plane schedules call Tenants' Services."

III

The Atlantic Regional Headquarters of SPC on Great Inagua strongly suggested a fortress, as, in a way, it was. Squat and massive, it had withstood every assault of tempest and wave that the Atlantic Ocean had hurled against it for over two hundred years. Built chiefly of reinforced vitrolith, its few outer windows and doors could be closed by massive, watertight storm shields so that its outer surface offered no edges, or angles, to the elements. Hurricane winds had blasted at it, thundering tons of water had battered it, but it had never so much as sprung a leak.

From Dorthy's office on the topmost level she could see little Inagua Island northward, and beyond that, the open sea; but the view failed to move her now. Nothing had been going right. First her panic during Project Mile-Deep; then the aborted trip to Prime Center; then Tioru's abrupt turnabout; and now, Operation Safeguard was dying before it had properly got off the ground.

But it was Tioru that she could not stop thinking about. She could not imagine why it was that she was so dismayed; yet she felt hurt and lost. Maybe, she thought grayly, I was just kidding myself—pretending to be undecided, waiting for him to make up my mind for me . . . a fine act for the head of SPC to have to put on for herself!

But why had he, too, changed so suddenly, in only a few days? Had he been hoping for some convenient excuse to call it all quits? No, that was unfair; he never dreamed that Dryland would be so . . . And yet he's being so impersonal and efficient, as if—

Love, love!

Dorthy squeezed the tears out of her eyes and turned away from the blinding seaborne horizon. She had to show a little efficiency of her own. To begin with, to think of

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some way to persuade her skeptical, impersonal, efficient Tritons to make Operation Safeguard work.

Safeguard was a disaster plan, Dorthy's share in the preparations for the imminent collision with Flavia. It provided for the evacuation of all the Triton communities in the world, bar none. Those who were able would swim, warded by their dolphins. Those who could not —the young, the old, the ill— would be taken out on submersibles, or barges. All would rendezvous five miles offshore of their homes, and ride out the crisis in the cradle of the waters, afloat or submerged.

But it wasn't going to work. It absolutely demanded a preliminary, worldwide test evacuation, so that the operation itself should have no holes left in it. And the Tritons— almost all of them—were quietly, silently, politely having none of it. Half of them had already disappeared from their reefs into the deep waters; more were vanishing by the hour. They simply did not seem to believe in Flavia: no mass that fell in the subarctic zone of Unistam could hurt their tropical and isolated settlements, let alone disturb the eternal sea. The whole thing smacked suspiciously of a Dryland scheme . . .

"Dorthy?"

Dorthy started. "Tioru! I didn't hear you. Did you come out of thin air, like Storm?"

"No, not like Storm. You were just brooding, Dorthy. But about Safeguard—I've got a couple of reports."

"Good—I hope."

"Not very. They're from the seismic monitoring network. For one thing, there've been only three major quakes in the past five years —a long quiet period. The stresses around four of the main quake centers have been building up. One good shock could set off a chain of them—and Flavia could well pull the trigger. I don't think even the reefs will be immune."

"That's what I've been saying all along," Dorthy said. "What else?"

"A minor clue. Mount Pelee is showing signs of life—for the first time in ninety-three years. Nothing much—just a small plume of smoke and steam rising from the crater. But in context, it's a bad sign."

"Well," she said, "it's bad. But maybe if we relay the news to the reefs, it'll help the skeptics to change their minds. Try it, anyhow."

"I already have," he said quietly. He made no move to go. There was a long, awkward silence. At last, Tioru cleared his throat.

"Dorthy—"

She nodded, looking off at the horizon, not trusting herself to speak.

"Dorthy, I could have phoned you. The reports could have waited, or come up on the vidphone—anything. But I had to talk to you."

"All right." She tried to sound

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casual; but she nearly choked on the second word. "Talk."

"Listen to me, Dorthy. We haven't begun to talk yet. On Wreck Reef, you were in despair because you thought you'd fumbled Mile-Deep. In Philadelphia, I was in a panic because I thought people hated me—and because I found a dead girl. We can't make any sense to each other under conditions like those—and neither of those things has anything to do with us."

With her fingertip, Dorthy traced loops and zigzags among the buttons and switches of her communications console.

"What's on your mind?" she whispered.

"A start. A second start. It's ridiculous for both of us to try to be so impersonal. If we could start again . . . well, we might find something new to think about. Something that would help."

Filled suddenly with frustration and self-hatred, Dorthy swung to him, weeping helplessly. He seized her hands.

"I can't believe it—I can't!" she sobbed, her fingers clenching around his. "You know what would happen. We'd talk, and we'd talk, and in the end—we'd have talked ourselves into the same old impasse. Do we have to go through all that again? I couldn't bear it, Tioru."

"I can't guarantee that we won't talk ourselves into an impasse, but I'm sure that, if we do, it will be a new one, not the same old one."

"A new one! How mysterious you sound. What do you mean?"

"There are some facts about Tritons that you don't know, and they will almost certainly change your outlook when you do."

"Well for goodness sake tell me!"

"It's not for me to tell you. Storm will have to do it."

"Storm! When?"

"He'll be here tonight. He's on his way now from Great Barrier. He wants to meet both of us on Little Inagua."

"Tioru, you schemer! What are you up to?"

"You have a suspicious nature. I'm not up to anything except trying to iron out our difficulties. Whatever it is that Storm has planned, I had nothing to do with it. He phoned me several days ago and said that he wants both of us on Little Inagua at twenty hours today. He also asked me to find a beach there, somewhat removed from everything, as our meeting place. I found a beach that seems to meet the requirements."

"A beach, removed from everything, for three people? This sounds like a meeting of conspirators!"

"It isn't a conspiracy. It's . . . well, you'll just have to wait."

A twilight calm lay upon the channel between the two Inaguas. Along the western horizon the sunset had dwindled to a band of jade green which blended upward into a broad zone of dusky blue. This in

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turn merged into a violet arch at the zenith, finally deepening into the fathomless violet-black of night where the first stars shone.

Dorthy and Tioru, prone on the deck of a water scooter, skimmed smoothly across a sea that had become a deep green mirror striped with shining, limpid, pale green ribbons of the afterglow reflected on its gently undulating swells. Northward ahead of them lay the long flat profile of Little Inagua. Over the sea beyond Little Inagua a colossal thunderhead reached for the zenith—a cumulo-nimbus tower with a flat top drawn out at one side into a point like the beak of an anvil. It was in somber blue shadow save for the westward side of its summit which caught the last coral-pink sunset glow. Internal lightning flares flickered through it.

"How are you going to find the beach where we're to meet Storm?" said Dorthy. "I don't see a beacon anywhere."

Tioru said, "You can't see it from here. It's on the other side."

He steered a course around the easternmost point of the island, then northwest. An orange glow in the sky ahead of them, its source hidden behind another promontory, threw into black relief a skyline with an architectural quality. Portions of it appeared to be a crenellated wall. Tioru veered around this enigmatic headland and entered a circular lagoon that had been cut back into the island.

The lagoon was bordered by a beach, and behind the beach was the curving mass of a huge ruin—a facade of shattered walls, broken arches, and standing isolated pillars rising from a jumble of fallen blocks of structural glass, chunks of reinforced concrete bristling with protruding metal rods, and warped sheets of corroded bronze. Its middle portion was ruddied by the light of a bonfire blazing at the center of the beach, but the more distant portions of the crescent were only vague masses.

The figure of a man was silhouetted against the fire. He raised an arm and waved.

"That's Storm," said Tioru.

Dorthy said, "I've seen this old ruin before, but it was by daylight. One of the people with me said that it dates back to the Twenty-second Century, but that was all they knew. Why did you pick such a strange, wild place as this?"

"It's what Storm wanted," Tioru said.

The scooter slowed, grated on a coral dome, and stopped. Dorthy and Tioru lowered themselves into the waist-deep water, freed the scooter and, with Storm's help, beached it.

Dorthy said, "Now, please tell me the meaning of these mysterious goings-on before I explode."

Storm smiled and said, "Please don't do that. You'll know everything before long."

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Between the fire and the water's edge, but nearer the fire, lay a great flat-topped chunk of some bone-white material partially embedded in the sand. It could have been a massive inverted block from an ornamental cornice; traces of geometrical designs were still dimly visible upon it and one side was formed like a flight of steps. Its flat top was almost level, rough-surfaced, and provided a natural podium. The lower, intertidal portion of its sides was encrusted with barnacles, clams, skeins of sea wrack, and other marine growths. Storm motioned toward it.

He said, "Now if you please, Dorthy, we'll go up these steps to the top of the rock. You stand in the center and face the fire."

Dorthy complied and said, "This seems silly. What happens now? I feel as if I were expected to deliver a speech. Where's the audience?"

Storm and Tioru seated themselves on the front edge of the platform, one on either side of her.

"You don't have to make a speech," said Storm, "but you do have an audience. Look."

Dorthy looked across the leaping flames, surveyed the beach from end to end, and at first saw nothing unusual—only the sweeping concave curve of the beach with the giant ruin as a backdrop and above it all the night sky, now filled with stars.

Then, with a sudden shock, her perceptions came to a focus and she really saw what was before her. She gasped and covered her mouth with her hands.

There were hundreds of Tritons facing her, men and women, old and young. They were spread out along the central portion of the beach, back among the rubble where the firelight was dim—standing, sitting, reclining on and among the tumbled blocks and shattered pillars, silent and motionless as statues. At Dorthy's gasp and gesture of amazement the tableau dissolved in a wave of laughter and applause.

"We have a presentation to make to you," said Storm. "You're about to meet the two people who were the instigators of it all. Look straight ahead of you across the fire, and watch."

Directly opposite her, between two mounds of tumbled masonry, Dorthy discovered a narrow open lane that led to a triple archway in an intact section of wall. Through the arches she could see nothing but darkness. No—something was moving in the shadows under the central arch. Two people became dimly visible, slowly advancing into the firelight.

Dorthy peered and tried to identify them. As they came farther into the light she felt that there was something familiar in the two figures, side by side. She had seen them before—somewhere, sometime. One was taller than the other.

They came slowly down the open

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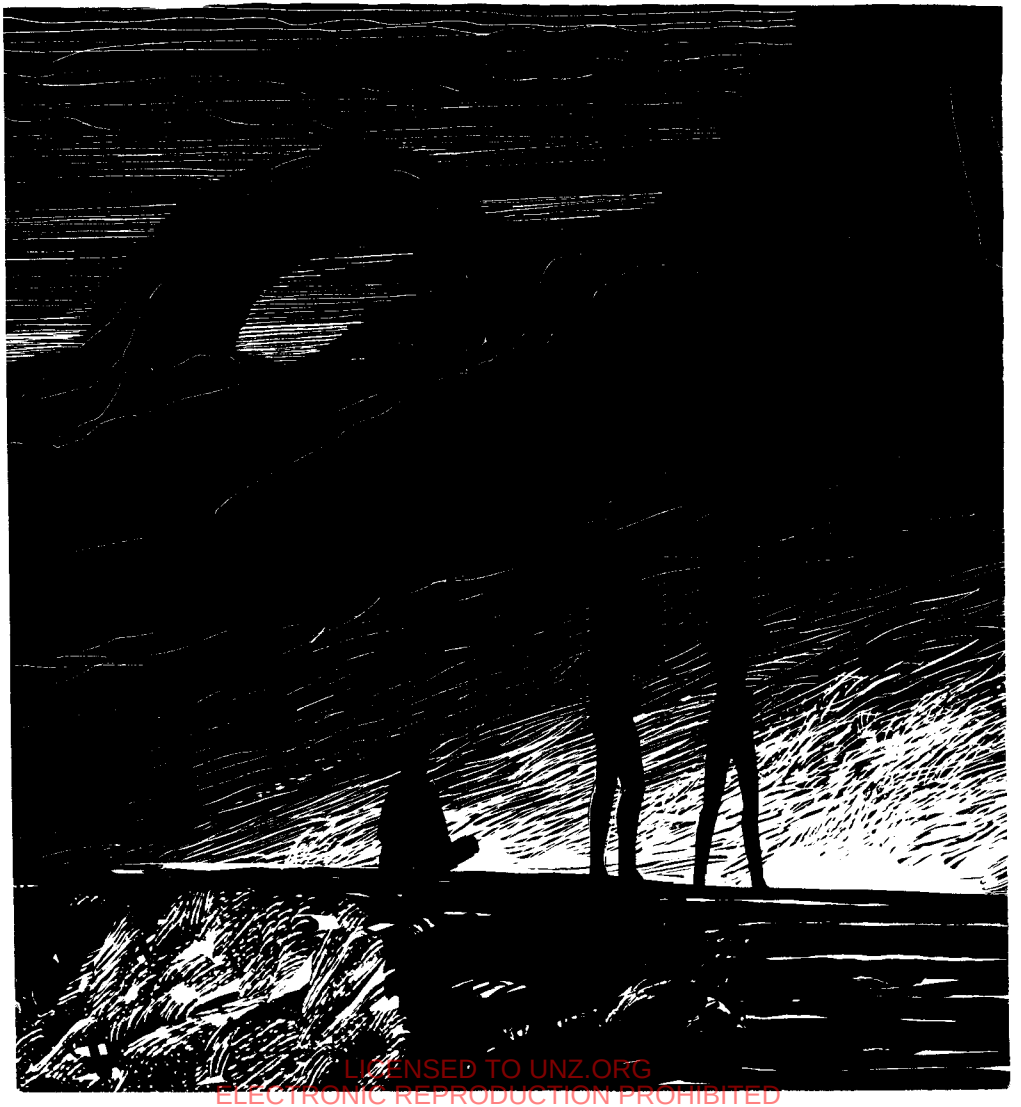
lane and into the full light of the fire.

Involuntarily Dorthy cried out, "Limpet and Squid!"

Both children had their eyes fixed on Dorthy with expressions of intent solemnity. Limpet was carrying with both hands a circular casket of carved ivory.

They separated, walked around the fire, approached the platform of rock, mounted the steps, and



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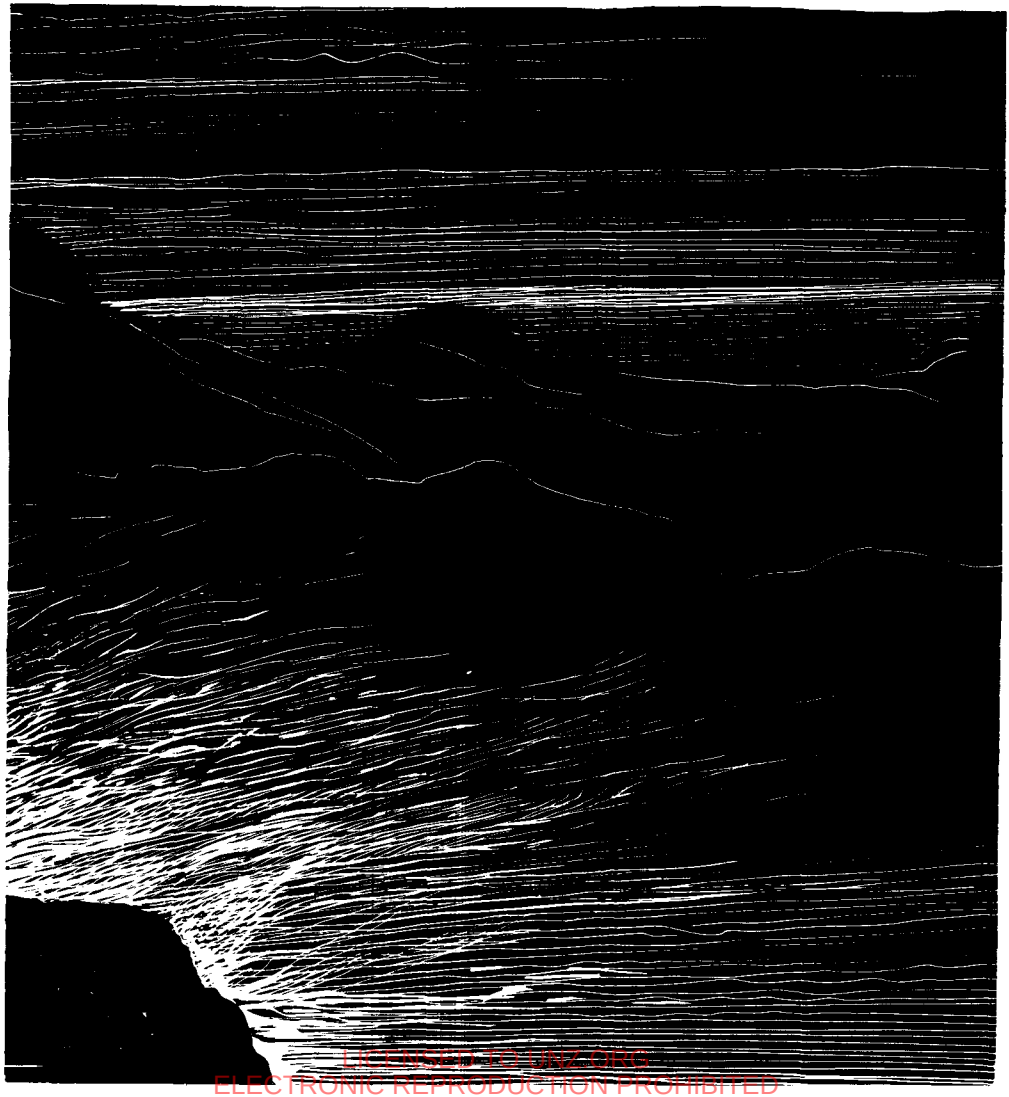
stood on either side of Dorthy, facing each other. All the other Tritons had become silent and motionless.

Limpet began to speak in a clear little voice which trembled at first, then steadied as she went on.

"There are people here tonight from all over the world," said Limpet. "At least one from every reef. It was Squid's idea at first, but Storm got it all organized. The box and what's in it is my idea and



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they're from everywhere, too. The box is made of pieces of narwhal ivory. Here Squid, you hold it."

Squid took the box and held it. Limpet pressed the edge of the lid, it flew open, and Dorthy saw that it was lined with satiny white material. Resting in this lustrous setting was a golden bandeau spanning about two-thirds of a circle; it was formed of intertwined golden dolphins, each one with a small pearl for an eye. Projecting from the bandeau were two curving fernlike golden fronds simulating the antennae of a Triton.

Limpet continued, "This is from everywhere, too. The white stuff is sea-silk. The gold's from coins that someone found in an old wreck off the Florida Keys. The pearls are all from different places all over the world, one from each place."

Removing the golden bandeau from the casket, Limpet adjusted it on Dorthy's head and positioned the antennae so that they appeared to be sprouting from her forehead.

"This stands for the love of all the Tritons in the world," said Limpet, "because you're the one Dryland person who cares the most about Tritons, and it means . . . it means—"

Here Limpet became unable to speak, compressed her lips, and pressed her clenched fists against her bosom.

"It means that now you're a Triton!" said Squid in a voice that was heard by every Triton on the beach and that reverberated in the recesses of the ruins.

"I . . . oh . . . I . . ." Dorthy began. Then both she and Limpet, overwhelmed by their emotions, embraced each other and burst into tears.

"I *knew* this would happen," muttered Squid.

Storm stood up, raised his voice, and said, "Dorthy has been declared a Triton. Do we all agree?"

"YES!" shouted the Tritons in unison, then converged on the platform.

Limpet and Squid escorted Dorthy down the steps, followed by Tioru and Storm. Everyone wanted to clasp her hand. She had never seen so many outstretched hands and had never been so deluged with affection. She could think of no response other than variations on the theme of "I'll never, *never* forget this!"

After the turmoil had subsided the Tritons congregated near the fire where they sat or reclined on the sand. A cobalt-blue beach rug patterned with white sea horses was provided for Dorthy.

"You haven't heard everything yet," said Storm. "There's more to come."

"More!" said Dorthy. "What could that be?"

Tioru said, "Don't you remember? There are some facts about Tritons that you've never been told."

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"Why have you waited until now?"

Storm said, "Because by general agreement among Tritons we've never told any Drylander and we don't intend to—not for a while. There are still billions of people who disapprove of tectogenetics and who feel that the Tritons shouldn't have been created in the first place. If they knew what I'm about to tell you, their hostility would increase and the results might be very unpleasant for us. We can tell you because you've been taken into the family. By the same token we're trusting you to keep the information secret."

"I promise not to repeat it—whatever it is."

Storm meditated and said, "Did you ever hear someone refer to hitting the jackpot?"

"No. It doesn't mean a thing to me. What is it?"

"It's an archaic Dryland expression. It means risking something in the hope of realizing a gain and then to reap one far in excess of one's expectations. Well, when the Drylander tectogeneticists created the Tritons they hit the jackpot, in a way; but they didn't know it."

"A reward in excess of their expectations? What was it?"

"The hybrids."

Dorthy sat bolt upright and exclaimed, "What!"

"The hybrids. Or, as I think you've called them, the In-Betweeners."

"I don't understand—not at all."

Storm reflected again and then said, "Did you ever visualize something so clearly that it was almost as if you were looking at the thing itself?"

"Yes. I suppose that everyone has done that sometimes."

"Did you ever visualize something so strongly that you could actually see it as if it were an external, material object?"

"No. And if I did I'd call it an hallucination."

"Exactly. People *do* have hallucinations. They're an inherent capability of the human mind. But ordinary hallucinations are unpredictable, and don't happen because you will them to happen."

"There are drugs that will do it."

"Yes, but the results are beyond control. You have to take your drug hallucinations as they come. Wouldn't it be useful if you could hallucinate at will according to your own specifications?"

"That's a weird idea! Why would it be useful?"

"Suppose you were an artist, a designer, architect, engineer, or writer. Or an executive of any kind. You could hallucinate your ideas and they would be externalized, right before your eyes. The architect, say, could hallucinate his plans, and the completed building. He could change, modify, revise in an instant. Think of the time, sketches, and false starts it would save."

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"I suppose it would. But how did we get off on this wild tangent? It isn't possible."

"Oh, yes, it is. Some of the hybrids can do it."

"I don't believe it! It's too fantastic!"

Storm dropped on one knee in front of Dorthy, cupped his hands together, and said, "Look at my hands."

And as Dorthy looked at his cupped hands, suddenly they were full of fire. Little yellow flames leaped and danced. Then they were gone.

For a few moments there was a great stillness. The bonfire crackled loudly and a swarm of sparks swirled up toward the stars.

"It's a trick," said Dorthy. "And *I* saw it. If it was an hallucination, it was mine."

"We both saw it. It was my voluntary hallucination, but I made you see it also. We call it a transfer hallucination."

"We! You said the hybrids—! Storm! You!"

"Yes. My father was a Dryland Maori. The fact is buried in my personnel file somewhere. I happen to be a hybrid who looks like a normal Triton, just as some of us appear to be normal Drylanders."

Dorthy swallowed and said, "I'll believe that you used hypnosis to make me see a handful of fire. I don't know how you managed it. But I just can't accept that it was an hallucination controlled by you and transferred to me. Storm, was it?"

Storm said, "Dorthy, what do you think of first when you think of me?"

"Well . . . for one thing, you always arrive and depart unseen."

Storm said, "Like this?" and vanished.

Dorthy cried, "Storm! Where are you?"

"Right here. I haven't moved," said Storm, reappearing. "Your perception of me was blocked. That was a negative hallucination; also one of the most elementary. It's the best that I'm capable of. I'm not a very gifted hallucinator but the talent develops with use. I practice the simpler exercises and hope that I'll go on to the more difficult ones. I can't hallucinate a rigid object; the outlines waver like smoke in a breeze."

Dorthy felt a tide of weakness rising within her. A curtain of shadow seemed to be forming before her eyes and gradually becoming darker. She said, "All this is too much. I think I'm going to pass out."

She heard Tioru's voice say, "Here, drink this."

The brim of a cup was pressed to her lips and she gulped down a pungent, salty liquid. The curtain of shadow dissolved, the tide of weakness ebbed.

Tioru said, "Is this enough for one session? Or do you want to go on?"

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"I think I'm all right now. I have some questions. For one, are all hybrids hallucinators?"

"No," said Storm. "Some are . . . well, we call them empaths. They have a peculiar rapport with animals—dolphins, usually, of course. It isn't exactly telepathy, but it's similar. Some are mass-sensitive. Others have a homing ability. There are a number of categories, and every hybrid has a talent in at least one. And there are several categories of hallucinators—visual, audio, tactile, even a few who can hallucinate tastes and odors. Some can hallucinate in two or three categories at the same time. Some can transfer, others can't. The visual type is the commonest."

Dorthy turned to Squid and said, "What's your talent?"

Squid said, "I don't know. It hasn't showed yet. You can't tell when it will."

"A talent may show itself at almost any age," said Storm. "The earliest known, I think, was ten months after birth. The father is a violinist, and the parents—and some of their friends—began to hear violin sounds at all hours and in unexpected situations. It was some time before they realized that the baby was doing audio transfers."

"How upsetting that must have been!" exclaimed Dorthy.

"Why upsetting?"

"It seems so . . . so uncanny and unhuman."

"On the contrary," Storm said. "All these talents are inherent human capabilities and were known long before there were either Tritons or hybrids. The people who had them were known as sorcerers, soothsayers, saints, healers, or miracle workers. In Drylanders they are super-recessive capabilities, as if they were locked up with an extremely complicated lock that doesn't open except under very rare —and unknown—conditions. Hybridizing Drylander and Triton appears to be the combination that opens the lock. That's why I said that in creating the Tritons the Drylanders hit the jackpot without knowing it."

Seized by a sudden thought, Dorthy turned to Limpet and said, "Do you have any hidden talents?"

"No!" said Limpet. "I'm just a Triton. I'm nobody special."

Dorthy said, "I don't agree with that. To me, you and Squid will always be someone special."

She turned a questioning look toward Tioru, who smiled and said, "No hidden talents here either."

Dorthy pressed her fingertips to her temples and closed her eyes for a few moments, then said to Storm.

"I need to think about this for a while and try to absorb it. I don't doubt what you've told me, but it seems unreal, as if it might melt away any minute like—what did you call it?—a transfer hallucination."

"You've had all you can take for the present?"

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"Yes," Dorthy said. "Unless there's something else programmed."

"There's nothing else."

"Then I'll say the final words."

She took Squid and Limpet by the hand and said, "Come with me."

The three of them mounted the rocky platform. Standing between the two children with her arms around their shoulders, Dorthy faced the assembled Tritons and said:

"What you've done for me tonight means more to me than you can ever know. I love all of you, and especially Squid and Limpet. May you find the green deeps at peace."

The response of the Tritons rose in a wave of sound: "And the Dark Waters quiet."

The Tritons rose to their feet and began to move toward the water's edge. Dorthy came down from the platform and stood facing the beach with the little swells of the incoming tide washing over her feet. She extended her arms on either side and as the Tritons moved past her and waded into the shallows each one stretched out a hand and brushed it against hers.

The near-calm in the dark sea offshore was disturbed by the surging and hissing sounds of a flotilla of submersibles rising like surfacing whales from their berths where they had lain waiting on the bottom. Dorthy wondered how they had known when to surface. By thoughts leaping from mind to mind, from hybrids on the beach to dolphins to hybrids in the ships?

When all the Tritons, except Tioru, were in the water Dorthy turned and faced the sea. The subs had turned on their undersea floodlights so that each one was encircled by a halo of pale green luminous water. The dark shapes of curvetting dolphins and swimming Tritons were visible in the lighted zones. The Tritons began climbing aboard the subs that would return them to their reef homes around the world.

The floodlights blinked out one by one, leaving a swarm of paired red and green running lights which began to separate and disperse. Dorthy watched as they fanned out over the sea, receding and dwindling. Then she turned and surveyed the beach.

The fire had subsided to a bed of bright orange-yellow coals with small blue flames flickering over them. Beyond it, the blue and white beach rug lay on the sand with the round ivory casket resting on it. Tioru was standing beside her.

He said, "Where do we go from here? How do you feel after tonight's happenings?"

"I'm not sure just where we go from here," said Dorthy. "And my feelings . . . right now they're a mishmash. I'm happy—and I'm scared at the same time."

She walked slowly to the beach

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rug, seated herself on it, hugged her knees up under her chin, rested her chin on them, and stared at the dying embers. Tioru seated himself beside her and waited for her to go on.

Finally she said, "I'm happy because of what was done *for* me. That doesn't need an explanation. But I'm scared of what has happened *to* me. Suddenly I'm obsolete. All Drylanders are obsolete."

"Think about that a little more," said Tioru. "You've been jolted by having to believe the unbelievable. Tomorrow you'll feel differently."

"But this isn't tomorrow, it's now. This is how I feel now. What chance do Drylanders have against a race that can hallucinate at will, and who knows what else? We're all on a moving floor carrying us to the gateway to oblivion. 'Drylanders This Way Out. Exit From the Universe.' What else can I think?"

"You can think this," said Tioru. "Look. Suppose the human race had evolved as Tritons to begin with. What would they do about the Dryland world? They'd have to invent Drylanders to exploit it. They need each other—and that's just as true for you and me as it is for Drylanders and Tritons collectively. And we'll need more than that when we start living on other worlds. It's a big universe, and a mere two kinds of human being won't be able to cope with it. It takes more than two fingers to make a hand."

"Still *more* kinds? That's even worse! A proliferation of Things!"

"Am I a Thing?"

"Oh, no! Tioru, I'm sorry! I didn't mean that! But it still scares me."

"That's because it's an utterly strange idea. But it won't always be so. Some day all these strange things will be commonplace. You're frightened because your mind is tired. Tonight was just one shock and surprise after another."

"I'm not tired. I'm shaken. I'd feel the same if I returned to Atlantic HQ and found it shattered by an earthquake. Don't you see what this does—to you and me?"

"Probably I don't see what you see."

"It means that we can never marry and have children. We'd be doing our bit to help the decline and fall of the Dryland world. The Triton world, too. And I'll have to stand by and watch it begin to happen. I'm honor bound not to tell what I know. Normal Tritons and Drylanders will be retarded children compared to the hybrids. They'll go the way of the mastodons and the Neanderthals."

Tioru looked out toward the dim whiteness rolling in on the top of each incoming wave. Then, slowly, "I think I see your fear—and it's wrong, misevaluated, misunderstood. It'll take a day or two to reshuffle your values and understandings.

"Remember this, Dorthy; you are a female—yet some of your children will be male, with characteristics of

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mind and personality and body that you do not have. I am male—yet some of my children will be females, with alien-to-me characteristics. And that is because all human children are hybrids, in that they're the result of a cross between male and female. Does that make them less *our* children, because they are not identical to us?

"You say the hybrids will mean the end of Drylanders. The end of Tritons, too, in a sense.

"You're forgetting that *you* are the continuation of the first living entities Earth ever produced—that the life in your cells started some two billion years ago, and has never ceased in all that time; it has only changed, and grown, and learned.

"Death is not-change; the races that ended were the ones that didn't find a way to change.

"The hybrids mean simply that neither Drylander nor Triton is doomed—for together, we have found a way to change, grow and learn."

Dorthy knuckled her eyes. Then she said, "I can't think any more tonight. Let's stay here until the fire goes out and forget the problems for a while."

The tide had been creeping up the beach as they talked. A line of foam would surge up the gentle incline, and recede. Then advance and recede again; each time it came a little farther. Finally it touched the edge of the bed of glowing coals. There was a hiss, a cloud of steam, and the seaward edge of the fire became a fringe of black emitting little wisps of vapor.

Tioru said, "Dorthy, I think I know what you're thinking."

"Yes?"

"The fire is the world of normal Drylanders and Tritons. The tide's the Tide of Change. You're watching the end of the world."

"Tioru! You're reading my mind! You do have a Talent!"

"I swear before the sea and the stars, I'm not a hybrid and I didn't read your mind. I just know a little of the way it works."

They were silent for a while, and the blackened area inched across the hot coals, hissing and steaming.

At last Dorthy said, almost inaudibly:

"No. No, I can't face it. It's too much. Too many things coming to an end at the same time. All I want to do now is . . . is to run away and hide."

"No matter what happens," Tioru's voice said in the dusk, "wherever you go, whatever you do, you will hear the voice of the sea, Dorthy. And wherever you hear that voice, you will hear mine, too. You are a Triton now. The sea has made you its own. Once you have been down into the Dark Water, you can never come back."

"I know it," Dorthy said.

The fire became a thin red line. Then the tide surged over it, and the world was dark and waiting. ■

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Leo Summers

The Enemy Within

The Alien didn't intend to set a booby trap; nevertheless he did.
He didn't know that Earth was, for him, a booby trap; nevertheless it was.
And one small boy really didn't consider the booby trap
an undesirable situation . . .

MACK REYNOLDS

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Franklin Monroe was in a state of euphoria.

For one thing, it was a superlative day. It couldn't have been a more beautiful day—sunshine, temperature, a certain *cleanness* in the air. It was a vintage day.

Besides that, he had escaped his guard and was on the town—or, at least, the countryside.

He went along, relishing it all. Relishing each patch of greenery; that colorful stone by the side of the path, the bird sounding its mad head off, that tree in full leaf.

Oh, it was a beautiful day, all right, the perfect day in which to escape one's guard. The immediate thing was to remain at large. Franklin Monroe headed for the timber. In his haste, he failed to detect the weight loss when the gun he carried fell from his belt and to the path.

The alien space scout did not descend on the White House lawn, Red Square, nor in the sea to be confounded by porpoises, nor yet in Australia to be confounded by kangaroos. Nor did the occupant have any idea of approaching the first higher life form he spotted and saying, "Take me to your leader." His culture had no conception of leaders.

He chose a rather remote area and settled to ground unobserved.

It was a one-man scout, a most impressive product of an advanced technology, and its pilot was most surprisingly similar to Earth-side life forms. Perhaps the logical reason for this is that his assignment involved locating and making a brief preliminary exploration of planets potentially suited for trade with his species. He breathed air, imbibed water, assimilated carbohydrates and proteins, was reasonably comfortable at Earth temperatures and found the gravity tolerable.

Thus it was that he was mildly jubilant with Earth.

Only mildly, since over the aeons he and his colleagues had discovered that there are other things besides oxygen to breathe, water to drink, bearable gravity and temperatures—such things as rattlesnakes.

However, the point here is that he was most remarkably similar to life as we know it, in its higher forms, on Earth.

For, fond romantics to the contrary, it is most unlikely that elsewhere in the galaxy the evolution of life will duplicate that on Earth, finally to the point of producing vertebrates. Vertebrates are unique, indeed.

Take, for example, the manner in which we breathe air. It comes in through the mouth or nose, and inconveniently must share the same canal used for food. The snail, whose lung has a passage and opening distinct from the food passage, is better off. So also is the grasshopper which breathes through portholes near the organs to be aerated. But this is not the sole off-beat quality of the mouth. Besides serving for

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both air and food, it is also the most powerful weapon of most of we vertebrates and sometimes the most deft organ of manipulation. In addition, the mouth has the peculiar function of emitting sounds and is also used for expressing feelings through sneers, smiles, scowls and such. Yes, the mouth alone is most unique. An organ combining ingesting, breathing, chewing, tasting, biting, fighting, yelling, whistling, grimacing, murmuring love preliminaries and helping to thread a needle.

To expect an alien life form to evolve along such similar lines as to produce such an organ, is truly asking too much. Gentle reader, in your far dreams of far planets, hope not ever to kiss an alien mouth.

Nevertheless, our visitor was most remarkably similar to life as we know it.

So similar he hardly had left his vessel, after throwing on all automatics as prescribed upon making first landing on an alien world, when he met tragedy as he trod upon a rattlesnake.

Rattlesnake venom is poisonous stuff to we who are native to Earth, but to our alien and his different biochemistry it proved as sudden and violently deadly as botulin to our own. One millimicrogram would have killed him; he received a five-gram injection. There was instantaneous paralysis, followed by death so fast he scarcely felt the prick of the fangs before he stopped altogether. He carried a score of defenses against a hundred potential threats, and had time to utilize not one.

A family of hungry coyotes finished his remains and died themselves within the hour. While we of Earth find that the substances of practically all other organisms, animal, plant or microbe found on our planet can be digested and used by us, at least after cooking, this is not to be expected of other life forms. They would not be able to use us as food, nor we them.

Franklin Monroe had, as a matter of fact, seen spaceships before—on television.

However, this one was neither cigarlike, with fins to one end, nor yet saucer-shaped.

It was spherical and the alloy of which its shell was made gleamed in a way similar to mother-of-pearl. It was not meant to be beautiful, the alien life form possessed no sense of vision, but to the human eye it could hardly have been more so.

At first, Franklin Monroe could do nothing more than stare his fill of beauty.

The ship was quite fully automatic and was quite adequately equipped with emotion-pattern scanners.

Franklin Monroe approached, his mood one of euphoria still—a happy, friendly, exploratory mood, full of curiosity, of course. In fact, to

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the scanners, a most acceptable, full mood-pattern of an exploratory scout.

The portal, at the head of the ramp, remained open.

Franklin Monroe entered.

The ship could have been built to his specifications. The chairs and other furniture, if that is quite the term—they *were* for an alien life—were even to his size.

It was fascination upon fascination.

He touched here, there; fumbled here and there, at the control board. It was obvious, even to an untutored, Earth-side mind, that this was the center of the small ship.

And while the ship was cognizant of the fact that he didn't have the logical-intelligence-knowledge pattern to be allowed to operate the controls, still there was no reason to bar him from various sensors.

So it was that of a sudden he felt his understandings projected a thousand feet above, and the Earth below to be observed. Not to be *seen*, but still thoroughly observed. Never, in all his years, had he experienced such as this.

He realized, vaguely, that it must have something to do with the levers, buttons, switches, with which he had been toying at the control board. He realized that he was still standing before that board. In fact, he could see it there in front of him.

But still, at the same time, he was a thousand feet above.

He wasn't seeing, hearing, and most certainly he wasn't feeling or tasting. But he was *observing* that which transpired below.

And up the path over which he had come, less than fifteen minutes before, he perceived his guard, hurrying along.

Panic struck him.

Audrey Monroe, in a tizzy, knew that he must have come this way. Aside from the fact that this was his direction usually when he got out of her view, she could have spotted him from the windows of the cabin had he gone down hill, or over toward the lake.

Oh, the devil! The untrustworthy, little devil.

She was relieved when she found the toy plastic pistol on the path. At least, now she *knew* this was the way he had come.

She wondered how far he had got this time.

He could have been no more than fifteen minutes out of sight. She had put the roast into the oven and had started out to check on him. But then her eye had fallen upon a pair of shorts which needed a sewn button, a matter of certainly ten minutes, at most.

But ten minutes to a five-year-old boy! Good heavens, the little wretch could be halfway to the Canadian border.

More happily, he was apt to be squatting at the side of the path, observing a caterpillar or other insect, or improvising boats of

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leaves and twigs at one of the woodland streams.

She knew better than to call him. He knew he had a spanking coming, and in his first reaction would possibly hide. And that led to a complication with young Franklin Monroe. The longer he hid from her, the more frightened he became, until the little fellow managed to scare himself into terror. She and Lew had found him once in the cellar, after five hours of calling and searching for him—frozen into terrified silence. Actually, there was no reason why he shouldn't have been playing in the cellar, it was just that when he heard their anxious calling, he panicked.

Confound the little devil. She had to keep her eye on that roast. Lew was scheduled to arrive in the late afternoon. She had promised herself to surprise him. No prepared frozen dinners today, nothing whatsoever from the deep freeze, or even cans. Today he was going to discover that the modern woman was not so hopeless as all that.

She came up abruptly.

And immediately knew what it was.

There was no question whatsoever. This thing was not of Earth. It was obviously a vehicle. There had been enough in the press over the past twenty years about flying saucers and unidentified flying objects that any intelligent person with the ability to read would have reacted as did Audrey Monroe.

It lay athwart the narrow dirt path which led from the Monroe summer cabin up into the woods. There was a small clearing here, big enough for it to have landed, small enough so that an aircraft flying above would have had to be almost exactly over before being able to spot it.

It lay athwart the route Frankie had been taking. The only path Frankie could have been taking.

There was a ramp and an open portal at the top of it.

Squealing fear, she dashed—the female of her species, rescuing her first born. The terror was not for herself. She had no feeling whatsoever about herself. Down through the long millennia came the instinct that motivated her. She was Cro-Magnon woman, throwing herself at the saber-tooth in the defense of her young.

The space scout had a greater defensive and offensive potential than the aggregate of all tigers that had ever lived, saber-tooth and otherwise. However, the culture which had produced it was mature.

It was doubly motivated. The new entity approaching it projected panic-fear-hate-of-the-dangerous strange. And the sympathetic intelligent life it had already accepted into its bowels, was projecting fear-of-pain-from-the-entity-without.

For Frankie Monroe knew perfectly well he had broken one of the numerous taboos that he hadn't

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even known existed. His life was a series of discoveries of new taboos. It seemed almost unbelievable how many taboos a boy of five doesn't know exist, until he breaks a new one.

He could hear his mother's voice now, screaming. He had broken some *terribly* important taboo. Nothing could be more obvious than that he was going to be spanked.

The culture which had produced the pseudo-intelligent craft was mature. Its computers' activities were stringently limited by built-in commands. It could not be aggressive, but it must do its utmost to protect itself and above all its living-intelligent passengers, on a purely defensive level—passive defense, unless acute external menace appeared. Only then was an absolute minimal defensive reaction permitted it.

Fast as Audrey moved, the ship moved faster.

The ramp disappeared into its interior. The lockway sealed itself immediately. The force field defensive web went up. And Audrey Monroe crashed into it, beating herself against the invisible.

She fell back and to the ground, her nose bleeding, a cut over one eye, dazed. For the moment her mind was blank.

Instinct functioned where mind did not.

She pushed herself to her feet, tried to scramble forward. And ran into the impassable, invisible nothing.

How long she stood there, scratching, pounding and mewling her passion, she did not know.

When she came to her senses, she was sitting again, drained of her physical energies, only her mind still hating, still ruthless of this strangeness which held her offspring.

Audrey Monroe was not a scatterbrain. And she was motivated by the strongest drive of which woman is capable. She forced herself to comparative coolness.

She had to think. She must think. She knew that.

A silly thought came to her. Man was the thinking animal. All right, Audrey Monroe—put up or shut up.

She breathed deeply, fought off the physical weariness. She had been a fool to expend her energies pounding against . . . against whatever it was she pounded.

She came to her feet again, and stepped forward warily. When she came up against whatever-it-was, she touched it cautiously. She could think only of glass. A glass transparent beyond belief, but feeling the same, simply a slightly cool hardness.

She stooped quickly and picked up a baseball-sized rock and began pounding—utterly without result. The force field would have taken a medium-sized nuclear explosion.

She pounded longer than made sense, and at long last dropped the stone in despair.

She stood back and said aloud, "I must think. I have to think."

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She returned to the invisible whatever-it-was and stretched her hand up. Audrey Monroe was five foot five; the screen, or whatever, went higher than she could reach. She stooped to the ground; it went all the way down.

She began circling to her right, always feeling. She worked her way completely around the alien craft, sitting there in the small clearing.

The invisible barrier extended the complete circle. She had to decide that it was a dome, completely over the small inter-world ship, as a glass cover is put over a cake.

She stood back, shaking her head.

Suddenly, she shouted, "Franklin, Franklin! Can you hear me? Don't be frightened, Franklin! Can you hear me?"

She never called him Franklin when she loved him. She called him Franklin when she scolded him, when he had done something taboo. He had done something taboo. He had run away to play in the woods, and, above all, he had come into this, this strange place, and that was evidently *very* taboo.

Frankie froze up. Her voice came through perfectly clear. But Frankie Monroe couldn't have answered had he wished. His throat was frozen.

She closed her eyes in despair.

She turned suddenly and ran for the house. Ran as fast as she could, as carefully as she could so as not to stumble. She must not waste the time involved in stumbling along the narrow path.

She dashed around the house and into the garage. She stared around desperately. Spotted the war surplus entrenching tool Lew had bought at the Army and Navy Store for camping and for use around the cabin here.

She caught it up and headed back for the alien craft.

She reached the force field, catching herself just in time to keep from running into it again. It was so *very* invisible.

She began digging at the point where it reached the ground. She dug as fast as she could and reached a full two feet in depth before despair again touched her. She went down another foot.

At last she dropped the implement and sat down sobbing. She realized, full well, that the barrier extended around the ship as a globe, under the ground as well as above the surface. There *was* no place she could break through.

She forced herself erect and took up the several-purpose tool, and used it as a pickax against the shield. It was no more effective than had been her fists.

Looking at her fists, she realized for the first time that they were black and blue and ached. She looked down at her blouse. It was splattered with blood. Her nose bleed had stopped, she didn't remember when, but her whole front was blood splattered.

The silly thought came to her that

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Lew was going to be shocked when he saw her. He only came out weekends this part of the summer, and, of course, expected her to be in her best to greet him.

Lew, she thought. He wasn't going to be here for . . . how long?

Who else was there?

The nearest, a few miles away. She could jump in the Renault, their second car, and . . .

No, she couldn't possibly take the time. How long the thing would remain was unknown. If she left, it might go away—with Frankie. She had to think something out on her own.

They had been mad to ever build this little cabin in the mountains and woods—without phone, without neighbors. They had been fools above fools. Get away from it all, they had told each other. Get Franklin out into the *real* air. Teach him from infancy to love the outdoors, animals, birds. Start him off right, with a love of nature. Teach him to fish, teach him to hunt, teach him the joys of solitude in the woods and mountains, away from the stench of cities, the stink of cars, the fumes of factories.

No phone.

She couldn't bear to take the car in search of help.

Lew wouldn't be here for far too long.

She had to think.

She turned abruptly and hurried back toward the house. Thank heavens, it was at no great distance.

She stood before Lew's gun rack, desperately. The shotguns—no, of course not. The .45 automatic, the souvenir from his war years—no, not even that. She brought down the converted 30-06 deer gun, with its telescopic sight, now obviously unneeded. She fumbled in the drawer for shells. She must concentrate. He had some heavier cartridges for heavier game, bear and elk. These must be the ones. She snatched up a handful and started back.

Ten steps from the door, another thought came to her. She swerved and hurried her way to the garage. The gallon can they had for kerosene to be used in the Coleman lantern. She grabbed it up and turned again.

No. She had forgotten matches. She left the gun and kerosene long enough to dash back into the kitchen and grasp the box of kitchen matches.

Back again for gun and kerosene and then up the path toward the hated intruder from space. The hated intruder that imprisoned Franklin Monroe.

She stood no more than ten feet back and fumbled the heavy ammo into the clip. She threw the bolt and aimed—not directly at the ship. She couldn't bear to aim in the direction of Frankie, knowing the penetrating power of the 30-06 was considerable.

She pressed trigger and the slug ricocheted, whining protest, off into the woods. She threw the bolt and

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fired again, and again, until the clip was empty.

So far as Audrey Monroe could see, there was no slightest indication of even a crack.

She let the gun drop and began scurrying around for twigs and wood. She built her bonfire right up against the invisibleness. She doused it thoroughly with the kerosene. She stood back and threw on the match.

The fire blazed spectacularly. She threw on more kerosene.

Could she detect the least indication of redness along the edges, an indication that the heat was affecting the barrier? Yes, yes, she did.

No, she didn't. The amount of heat the force-field web was capable of assimilating was beyond her conception.

Her fuel, both liquid and wood, expended, she sank to the ground again. She stared down at her hands, her mind on the verge of slipping over the precipice. She shook her head in wonder. She had never seen her fingernails in such condition in all her adult years—broken and dirty, one bleeding. And her wristwatch. The delicate, so delicate as to be ridiculous, wristwatch Lew had given her for their anniversary; shattered.

Where was Lew? Why wasn't he here? Wasn't marriage a sacred partnership? Why wasn't he here to take care of this?

Inside, the ship perused its data banks.

Its emotion-pattern scanners told it that the acceptable life-intelligence it had allowed entrance, was now projecting both fear and, less strongly, need of nourishment. The ship had done the necessary in regards to the fear. It had raised defenses against the outside entity.

It now analyzed the particular type of nourishment which the life-intelligence needed.

It searched deep its data banks. The nourishment needed was not available in the ship's supplies. It must be manufactured.

The scanners probed deeper, going beyond emotion pattern now and accumulating data.

Above his fears of his mother and his tiring of this environment, Franklin Monroe began to think of food. Something urged him to think of food. He had, he realized, missed lunch. In fact, now that he thought about it, he was very hungry. It was all he could think about. He couldn't remember ever having thought quite so hard about food.

The ship produced a five-pound chocolate layer cake with half a gallon of strawberry ice cream.

Frankie Monroe, on the wide-eyed side, set to, *sans* spoon or fork.

The computers had another problem. It was programmed to take off and return to the home system if the life-intelligence which controlled it didn't return within a set period. There had been no desire on the part of its designers to have this example of their technology fall

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into other hands, if disaster met the explorer scout.

The maximum time the explorer scout was to have allowed himself, before returning, was rapidly approaching an end.

Audrey Monroe was calling, "Frankie, Frankie! Can you hear me?"

She had no way, actually, of knowing if he was even alive. But she refused to consider that.

She had no way of knowing if sound could penetrate the invisible barrier. Or, even if that was possible, if her voice could penetrate the ship, only ten feet beyond, now that the portal was closed.

But for the moment, she could think of nothing else to do.

She called, striving to keep her voice from over-shrillness, "Frankie, please answer me."

A tiny voice wavered, "Mama?"

She wanted to scream to him. She mustn't.

Franklin Monroe was of an age when a family crisis would be precipitated by his locking himself in the bathroom and becoming frightened in the excitement of their trying to tell him how to manipulate the key, to the point of being unable to follow directions.

She called, in full attempt at being soothing, even as her psyche screamed her hatred of this abductor from the skies.

She called, "Frankie, don't be afraid. Everything will be all right."

Up to this point, it hadn't occurred to Frankie Monroe that there was anything to be afraid of—save the spanking he knew was due him for the breaking of taboos.

Now, suddenly, it swept over him how alien his environment was. He wanted with all the want of which his soul was capable to be in his mother's arms and safe in the homey cabin in which they were spending the summer months.

He began to wail.

The ship's computer-sensor system recognized the change in the intelligent-life charge which it had allowed to enter. It recognized, too, that the change was motivated through the devices of the entity beyond the screen, which was still projecting fear-hate-and-the-desire-to-destroy. It considered, and for the time rejected, the destruction of the hate-emanating-entity. The external menace was not as yet of the magnitude that its own minimal defensive reaction was allowed to function.

It had recorded earlier the fact that the hate-destroy-entity beyond the force field had attempted to destroy the field. But the entity's efforts had been so insignificant it was not necessary to multiply the field's strength—which was quite possible, if necessary.

Another element had entered into the workings of the computers. If the life-intelligence explorer scout, which was the master of the ship, did not return, and hence it became

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necessary to return to the home system without him, what then should be done with the new life-intelligence which it had allowed to enter? Should it be retained within the ship? Should it be rejected?

The data banks were scanned. There was no precedent. However, the sympathetic life-intelligence was in danger from the hate-fear-destroy-entity outside. It could not be left to the mercies of the enemy. It must be taken back to the home system.

Audrey Monroe, crouched on her knees as near to the screen as she could press, called, in what she struggled still to make a soothing voice, "Frankie, Frankie, now don't be afraid. Tell me. Tell Mama. Who is in there with you?"

"Nobody!" he wailed. "I'm *sorry!"*

She sucked in air, forced herself.

She called, soothingly, "Frankie, then *what* is in there with you? Some kind of little animal, or something?"

"There's nothin' in here," he wailed. "I wanna go home! Mama, I wanna go home."

"What took you in there?"

"Nothin'," he wailed. "I *walked* in! I'm *sorry!"*

She closed her eyes in agony.

"The *door's* closed!" he screeched.

She called, "Frankie, don't be afraid. Are you *sure* there is nothing in there with you?"

"There's nothin'. I wanna go *home!"*

Frankie Monroe was beginning to sense that he was in no immediate danger of being spanked. His mother wasn't just trying to get her hands on him so that she could spank him. The problem of getting back to the security of the cabin and her arms became more pressing.

"Take me *home,* Mama!" The problem was hers. She was his guard. She was his security. His wails intensified.

Which was recorded by the ship. But still the external menace causing the added stress was not deemed sufficient to take punitive action.

Audrey forced herself to such calm as she could possibly maintain. She must think. She simply had to think.

Franklin claimed the ship was empty, aside from himself.

For the briefest of moments, a hope spread over her. Could this be a government experiment? Was there an Air Force pilot, possibly one of those new space program people, somewhere in the vicinity? But no. The force field—the whole aura of the thing—was all alien. She must not clutch for straws.

She steeled herself and called, "Frankie, look around you. Are there any . . . any doorknobs?" That was a silly term, but what words could she use to a five-year-old? "Is there anything like a doorknob, on the . . . door . . . where you entered?"

"No!"

She closed her eyes and for a mo-

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ment was afraid she was going to faint. How she had kept from it so long, she did not know.

She steeled herself, struggled for the soothing tone.

"Frankie, look real good. Try to open the door and Mama will take you back to the cabin for your nice lunch."

"I don't *want* no lunch. I had ice cream and cake and my stummick hurts. I wanna go *home!*"

That first meant nothing to her, which was as well. Her strained capacities could only have boggled at that. She rejected it.

She called, "Frankie, is there anything on the door you can turn or move? Anything at all?"

"No!" he screamed, an element of anger now at his guard and security. She *knew* he wanted her. Why didn't she come and get him? He screamed louder, the scream of childish frustration.

For the first time in her life, Audrey regretted she had been raised an agnostic.

"Then, Frankie," she called. "Frankie, look all around you."

For a moment she paused. She was afraid to say now, what she must say. She had no idea of what might result. But there was nothing else. Nothing else at all she could think of.

She called, "Are there any sort of buttons you can push? Any sort of . . . levers you can move?"

"What?" his voice wavered.

"See if there are any little things you can move or push. You know, like being locked in the bathroom. You remember, you have to turn the key, just right. Mama is out here, and can't open the door. You'll have to open it from inside."

He wailed.

She sank back in despair. Perhaps it was as well. She had no way of knowing what might have ensued had he attempted to fiddle with the ship's controls. The chances that he strike upon the one which might open the door and/or retract the invisible barrier were probably remote. But what else was there?

Audrey Monroe had no way of knowing that Frankie had already played with all such ship's controls, long since, and that the ship had automatically locked all those that made any difference.

In the distance, she could hear the hum of an approaching car. She scrambled to her feet.

Lew!

She hurried down the path, no longer capable of remembering that she must not stumble, that she couldn't afford the time involved in stumbling. Twice she fell.

She met him at the door, breathless, only mewling sounds coming as when she had first scratched and pounded on the barrier.

He grabbed her, taking in the every-which-way hair, the blood on her clothes, the swollen eye, the torn fingernails, the torn clothing, the fact that one of her shoes was miss-

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ing, evidently unbeknownst to her.

"Audie, Audie! Who did it! Which way did he go! How long's he been gone?"

He spun and dashed into the house, to emerge in moments with his .45.

"Which way did he go!"

She moaned, "Frankie!"

He swung her up into his arms and carried her back into the house. He carried her to the couch and put her down with all the gentleness he could summon. His body was cold, cold.

"Where's Frankie?" he said urgently. "Audie, tell me. You're all right now. You'll be all right. Where did they go? Who took Frankie?"

She moaned, "The spaceship. The flying saucer."

He stared at her.

"Frankie," she said. The mewling sounds came again.

He spun and dashed into the bathroom, to emerge in seconds, a glass in one hand, a bottle in the other.

His hands shook as he brought forth a pill. "Here, Audie. You're all right. Take this." He held her up and forced the pill to her mouth. "Now drink this water. You'll be better. Here, take another one."

He held her tightly for as long as he could force himself to be quiet.

"Now listen, Audie. You've got to tell me. Where is Frankie? Who took him? Which way did they go? You've got to remember."

Once again, still once again, she did what she had forced herself to do so often this day. She fought for calm.

Finally, she swallowed and then breathed deep.

She said, "Lew. There's something strange up the path. Something . . . It's out-of-this-world . . ." She broke into an hysterical laugh at her choice of terminology.

He slapped her.

"Audie! Who's got Frankie!"

She shook her head. "All right. I'm not hysterical. Not . . . very. Lew, I'm not out of my mind. There's something up the path. Like a great big basketball, or something, only it looks like a giant pearl. Frankie's in it."

He had sunk to his knees to be closer to her. Now he looked uncomprehending.

Finally he got out, "What happened to you?" He touched the blood on her torn blouse.

"I . . . I guess I did it myself. Trying to get in. Lew, I tried everything."

She was becoming somewhat more coherent.

"Lew, I know what you're thinking. But I'm telling the truth. Up the path toward the woods—in that clearing. Something landed there."

He couldn't keep from staring at her.

He jumped erect and dashed to his gun rack.

"Where's my Springfield?" he snapped.

She was getting up from the

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couch, tossing back her hair with the back of her right hand.

"I took it," she said, breathing deeply. "I know all this sounds incoherent to you, Lew. But there's some sort of invisible . . . something around the spaceship. I tried to break through. I tried to shatter it with the gun. I tried to burn it. Nothing worked."

He left off staring at her long enough to pull down a double barreled shotgun, break it and thrust two buckshot into the breech.

He started for the door and she before him.

She led him up the path, at a run. She kicked off her second shoe, the better to make speed.

He picked it up, unthinkingly, and stuffed it into his side pocket, subconsciously realizing that she'd do better, later, if and when they found the other footwear.

She was slightly before him, still making her way up the path, when he spotted the second shoe, to one side of the road. He stopped long enough to go over and recover it.

She was calling back, her voice calm now, "Frankie is inside, but seems to be all right, although he's afraid. He says there's nobody, or anything, in there with him."

He took a deep breath, shook his head, and started after her again.

She rounded the slight bend and headed for the clearing in which the alien ship squatted.

She was halfway across the clearing before he rounded the bend behind her and drew up short, his eyes popping.

Even as she approached the barrier, the invisible barrier, the portal of the ship opened and a ramp slid out. Frankie, his face twisted and wet from tears, stood there.

She continued forward, unimpeded, her arms outspread now. "Honey, honey," she cooed. "That's Mama's good little boy. Come on, Frankie."

He made his way down the ramp, rubbing his eyes and sobbing.

She took him up into her arms and held him, as only a true guard and true security can hold one, and turned and walked away.

There was a *whooshing* behind them, but she didn't turn.

Lew's eyes, still wide in shock, shot upward. Following something into the ultimate skies.

He went after his wife and first born, back down the path again, speechless.

Audrey was murmuring the soothing sounds that only a true guard can murmur.

When they got to the cabin, she said, in mild distress, "Good heavens, my roast!"

She carried the boy into the kitchen with her.

Lew stared after.

He shook his head. "What a couple of tranquilizers can do." ■

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The Feckless Conqueror

CARL A. LARSON

The essence of pioneering always has been,
and always will be,
discovering new and unexpected ways to die.
The defense must be ingenuity—and genes!

Dusk shades the boulders when the naked biped turns the last of them in his search for worms. Suddenly he turns and stops chewing, an uncanny light glows behind the shrubs. The biped half rises, his fingers contract around a sharp-edged stone and his dark, unblinking eyes follow the ascent of the shining disk—hovering like an inflamed glob over his head. Until a vague recognition slackens his grip on the stone, the clawless creature has been ready to attack the moon.

"I was there," brags his distant scion and scratches his belly under the furs. "My charmed reindeer drew my sled to the moon and then to the world beyond." The smoke-filled yurt holds a breathless silence when the shaman paused. Pale-brown faces don't smile, slit eyes don't see an effete drunk babbling about his dreams. Drip of melting snow from the roof clinks loud during the wait for tales of the worlds beyond the moon.

After a brooding eternity a man with a slide rule asks for the junk to put people on Mars before 1980. Molecule for molecule, dream for dream he is the scion of the half-erect wormhunter, the fuddled

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shaman. Shall we listen to him? Isn't our breed sadly inept for an undertaking of that size? Or have a few scores of millennia molded a few of us for the red planet?

Common experience tells us that man can acclimatize to new environments, but our question extends to extreme conditions, the limits of endurance. Many of us fail to adjust to some environmental factor to which we are constantly exposed; could such failure of adjustment to terrestrial conditions point to a more wide-ranged adaptability?

We may come across any number of physical, chemical and biological obstacles in our conquest of other planets. Among them thin air was the first to draw notice; early frog jumps into space had to be overcome, at a price; the problem of reduced oxygen pressure.

At standard atmospheric pressure, oxygen exerts in dry air a partial pressure of 159.2 mm Hg. With increasing altitude the barometric pressure decreases, from 760 mm Hg at sea level to, for instance, 440 mm Hg at 14,200 feet. The percentage of oxygen is still 20.96. It suffices for a partial pressure of 92 mm Hg only. When suddenly exposed to such low oxygen pressure most persons feel some discomfort, due to a corresponding deficiency in blood oxygen. Often 10,000 feet, or 522 mm Hg, is taken as a practical limit above which most people need additional oxygen.

What happens when unadjusted persons are exposed to low O_2 pressure? A variety of symptoms may arise: nausea, vomiting, palpitation, forced breathing—the whole series of symptoms usually associated with alcohol intoxication including foolhardy pranks, and invariably loss of consciousness when the endurance limit is passed.

Acclimatization through slow ascent has been studied by many mountaineering expeditions. Again a variety of mental symptoms have been observed. Mostly they pass off and then qualified work can be performed for a considerable time. This is true for heights of 20,000 feet, with some reservation for lassitude, forgetfulness and slowness.

Before going into the tangible effects of acclimatization, we shall look at its limits. At 26,000 feet even well acclimatized mountain climbers become mentally inert and it is necessary to keep the time spent above 23,000 feet to a minimum. It is possible to spend a few hours at 29,000 feet—Mount Everest summit—without extra oxygen supply. At 35,000 feet survival is possible when breathing 100 percent oxygen, which will not, however, prevent the discomfort from oxygen deficiency in blood and tissues. Soon every foot counts. At 40,000 feet the atmospheric pressure is one fifth that at sea level, or about 141 mm Hg. A gallon of oxygen contains less than one fifth of the number of

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0_2 molecules it would at sea level—when measured at 40,000 feet. In the lungs the partial pressure of water vapor is 47 mm Hg at 40,000 feet and that of carbon dioxide 36 mm, leaving 0_2 a partial pressure in the lungs of only 58 mm Hg of the 141 available when breathing pure oxygen. At 50,000 feet and 87 mm Hg forced breathing of pure oxygen can get a little of it into the lungs; above 63,000 feet the blood boils, 47 mm Hg being equal to its vapor pressure at body temperature.

We know the answer: oxygen under pressure. Similarly, we could meet every acclimatization problem by modifying our environment. There is some heated discussion going on about how successful we have been in modifying our earthly environment. There is little doubt we could invade a planet with low 0_2 and stay in an artificial, if necessary pressurized, atmosphere.

The unshielded mammal, who conquered the earth from desert to tundra, did not remain naked. Invention was always the spearhead of penetration into alien regions. Even high technical skill has two faces: complexity and simplification. Air-conditioning is one of several means by which a group of people can survive in a desert climate; some simpler means were tried in the past. Similarly, acclimatization to low 0_2 pressure within the limits of the possible remains an alternative to pressurized 0_2 mixtures when planets with a thin atmosphere are to be populated. A true acclimatization will, of course, admit a greater freedom of motion, and prevent External Revenue people from screwing slot valves on the respirators to cash in at five cents a whiff.

In one experiment healthy adults were put into a low-pressure chamber and exposed to a sudden decrease of 0_2 partial pressure simulating 30,000 feet. Half of them remained conscious and could go on writing indefinitely. They were Alto Plano Indians who normally live at 14,900 feet in the central Andes. After a day of heavy work in their mines they would release some excess energy in ceaseless soccer games. We note that these men were exceptional, and we shall not forget the significance of half of them succumbing to the extraordinary stress.

If we are ever to attain freedom of movement in a thin atmosphere, we will have to reach long-term acclimatization. All healthy people have adaptive mechanisms that start working at low oxygen pressure. Specific cells near the blood-filtering tufts—glomeruli—of the kidneys feel something is wrong and start producing erythropoietin; the chemical signal for the bone marrow to step up its production of oxygen carriers—the red blood cells. A substantial increase in blood volume, wholly based on a higher cell content, is a characteristic feature of altitude acclimatization. In some people—remarkable among

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them a number of native residents of high-altitude regions—adaptation shoots above its target. Their hyperactive bone marrow fills the blood vessels with enormous quantities of red cells.

Unusual stresses, as well as familiar environmental factors, can bring to light the variability that marks our human breed. We have a variation outside of the normal, including polycythemia—excess of red blood cells—on old Tellus at sea level. We accept the prospect of other disease frequencies on Mars and other alien planets, but what if a trivial environmental factor, such as low oxygen tension, should take too high an adaptational toll? Could thin air permanently damage lungs and heart?

It has been known for some ten years that children and adults, born and living at high altitudes, have a high blood pressure in their pulmonary artery and in the right ventricle of the heart. There are additional signs of a permanent strain on the right ventricle. It is not quite clear how much of the permanent changes in heart and vessels are really advantageous—or at least not harmful. There is a broad variation, however, and it is obvious that a definite abnormality—patent ductus arteriosus—is more prevalent at high altitudes than at sea level.

Normally the ductus arteriosus closes soon after birth; during fetal life it connects the aorta and the pulmonary artery. When it remains open it does no good but sometimes mischief. To this can be added indirect, but telling, evidence of a hidden weakness in mountain dwellers.

Census figures from Peru give a high death rate for newborns in the highlands. In the lowlands neonatal mortality is high, but it doubles in the high Andes. At much lower altitudes the United States mountain regions reveal an increased neonatal mortality compared to general rates. Low 0_2 pressure contributes to the complex causes of pregnancy wastage even here. It is significant that Lake County infants weigh 380 grams less at birth than Denver infants—the rural of the two Colorado districts being above 10,000 feet.

The observation of a high neonatal mortality in a specific environment means that natural selection is brought into play. This situation is not limited to high altitudes and low 0_2. In the past natural selection has influenced the composition of human populations, and for colonists of alien planets it may again become a reality.

When the Spaniards founded Jauja at 10,800 feet as a capital city for their colony in the Andes, they made a mistake. Livestock was relatively infertile at these heights and the death rate among newborn animals was high. It was soon observed that Spanish-Indian infants had a higher survival rate than that of in-

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fants of pure Spanish parentage. Conditions became normal when the administration was moved to Lima, near sea level.

In some instances pulmonary hypertension is clearly deleterious, as shown by the prevalence of brisket disease among cattle, grazing above 7,000 feet. It consists of dropsy, due to right heart failure. Species differences occur, steers rapidly develop pulmonary hypertension when taken to high altitude; lambs do not. Perhaps still more important, differences occur within the same species.

In the South Park area in Colorado, for instance, cattle have been raised at 10,000 feet for generations. Here brisket disease prevails at some two percent, against near fifty percent in low altitude cattle taken to this level. There are gradations also of human pulmonary hypertension; height dwellers in Colorado and the Quechua Indians are almost similar in that respect—with a trifle 5 mm higher pressure in the Indians. But the Indians live one mile higher than the Colorado people, and the latter group belongs to the second generation of settlers while the Indians have inhabited their lofty home for at least twenty generations.

Now such observations, and the successful breeding of poultry for improved viability in thin air, would point to much more far-reaching adaptations than individual acclimatization. We have a series of facts that fit into a pattern of possible long-term adaptation for low 0_2 by human stock heritably endowed with increased resistance to this form of stress.

Though a wealth of facts have recently confirmed the higher efficiency of native dwellers of high mountains, when tested for physical activity and the chemical and enzymatic nature of important adaptational processes, we cannot pinpoint a transhydrogenase, or an oxidase system, as inheritably superior in high-altitude people.

Much the same can be said of other adaptational processes that we can observe or suspect. There lurks quite a lot under the surface but we cannot yet identify the true nature of an observed variability. We could with some confidence visit a planet with a deep earth-type atmosphere, but there are limits and there are dangers even in high 0_2 pressure.

Divers at work under 132 feet of sea water, breathing air, get their 0_2 at five times its surface value, meaning that its partial pressure equals that of pure oxygen at normal sea level pressure. For short stints this has no ill effects. Prolonged oxygen supply under high pressure is, however, not entirely harmless.

Oxygen can act as a poison on the central nervous system, provoking convulsions and unconsciousness similar to epilepsy. Among divers an unexplained vari-

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ability in tolerance to oxygen poisoning is well-known; often tolerance decreases in divers who have had oxygen convulsions.

Oxygen oxidizes. The respiratory enzymes are no exceptions. They can be permanently damaged by high oxygen concentrations in the tissues. Among adaptive mechanisms at high 0_2 we may note decreased red cell production—the reverse of low oxygen adaptation. Within the rather narrow limits drawn by oxygen in simple solution at high pressure, the anemic is the better adapted in a deep atmosphere.

There are other problems, connected with a deep, earth-type atmosphere, including that of nitrogen narcosis. Some four or five atmospheres are enough to make anybody drunk from N_2. Encephalographic changes show that one may be under the influence at much lower pressure. It may be stressed again that all these problems can be circumvented—as high-pressure breathing is in diving practice—but that adaptation within so far unknown limits seems possible and would be preferable to clumsy and costly artifices.

Thin and thick air have been practical problems for such a long time that the nature of adaptational differences have at least attracted curiosity. But what about our awareness of the geomagnetic field? What can we expect from people affected by low field strengths? Soon they will become realities to the explorers of the moon. High and varying magnetic fields are highly practical flight realities. Can we stand them?

Specialists on geomagnetism use the gauss to measure magnetic flux density; for our purpose it equals the oersted of electrical engineers. The strength of the earth's magnetic field varies from 0.25 gauss near the magnetic equator to about 0.65 gauss near the magnetic poles. The National Magnet Laboratory edging the M.I.T. campus uses a 250,000-gauss magnet. Thus it is possible to test on earth rather far-flung ideas about what we could meet in space.

On the moon we will feel, or not feel, a magnetic field strength lower than one thousandth of the geomagnetic field. For the flies and worms that got their bearings with the aid of the geomagnetic field, the situation would be confusing, but we cannot treat this as a first-rank problem now. What of us?

People have been freed from the geomagnetic influence, or to be exact they have been exposed to a field strength one thousandth of the normal. They felt quite well and on the whole they seemed to be unaffected. There was one exception, observed in ten-day tests at the Naval Ordnance Laboratory in Silver Spring, Maryland: Central nervous functions, as tested by flicker fusion, were considerably affected.

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The flicker fusion test has the subject adjust the flash rate of an intermittent source of light until he sees a continuous light. Under field-free conditions the flicker-fusion threshold was lowered to about half the normal value. The human brain is not wholly unaffected by unusual geomagnetic conditions.

As for high magnetic field strength, it may become a hazard during space flight when electromagnetic propulsion and magnetic shields against cosmic radiation radically change familiar conditions. Magnetic domes on radiation-exposed planets might substitute one hazard for another.

So far short-time exposure to fields around large laboratory magnets have produced no worse effects in man than making filled teeth ache. We may indeed be adapted to field forces never met with on earth. Mammals, insects and microbes exposed to hundred thousand-gauss fields have suffered no ill effects at short-time exposure.

But this is only part of the story. Long-term exposure to high magnetic fields delays wound healing and stunts the growth of young mice. Bacterial growth is inhibited by such exposure, and also the production of white blood cells in mammals. These observations may be a warning, as are the drop in body temperature, decreased tissue respiration, and disappearance of oestrus cycle in high fields. One cannot breezily dismiss the fear that high magnetic fields could delay, and even inhibit, the enzymatic production of biological polymers—including large protein molecules, and the master molecules of inheritance.

The hunters, who followed the mammoth and the reindeer into regions stern as death, did not know what they would meet, and they paid a high price for adaptation. We may be better prepared when we invade new planets, but we are sure to meet surprises.

Turning from space to New York, we may note that highly qualified researchers recently found a strong positive correlation between magnetic storms and the number of admissions to mental hospitals in that region. The observation was well substantiated, but it seemed to fit into nothing so far known and the report contained careful reservations about the possible interpretations. It may be added that earlier observations without statistical proof seem to suggest that human health and mental balance can be influenced by magnetic storms.

Let us not hinge too much speculation on the mental hospital admissions; less hardy stock than New York residents get irritated when telecommunications and traffic signals get out of whack during magnetic storms. If variable fields affect people, there is at least a variation in susceptibility; we are not all filing up at the hospital gates when geo-

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magnetism goes haywire. And whenever there is variation, selection has something to work upon. Geomagnetic storms have been with us since Adam. The majority of us may be reasonably adapted to such disturbances.

Gravity poses several problems of the type well-known from manned space flight. A standard Mr. Jones has a G tolerance between 2.5 and 5.0 G. For a few seconds he can withstand the double force. This is indeed not bad for an earthling. We also know that sub G forces are tolerable for a while.

But can we really adjust to a sub G environment? A rather tough assignment will be offered the 1975-1977 Mars flyby party in the form of weightlessness for some 650 days. It is possible to produce, at a cost, a constant centrifugal force that passengers will feel as gravity. The spin rate is limited by the construction of the human inner ear; we get sick above 0.4 rad/sec. So the long spin radius required for one earth G becomes impracticable and Mars explorers will live at sub G. How fit will they be after a year?

Sturdy young athletes need but a few months in a hospital bed to get reduced to average muscular prowess—or less. This is not zero G, but it means a reduced handling of G, with its consequences; such as mineral losses weakening the bone structure—a reality in prolonged bed rest and a conjectured result of long weightlessness in space. Heart and hemodynamic vigor may be weakened by the time the trip ends on old earth. After one and a half years of a Mars flyby expedition, G will feel like a lead garment.

What if we settle down in sub G, raise families there and take a look at the new generation? At first, we will miss friction and feel very clumsy, with mass and inertia unchanged at reduced weight. This feeling will be temporary. We will have to cope with some muscle dwindle and some demineralization of bone, but we will remain our nice old selves.

Gravity affects the final form of the growing body. On a sub G planet slender teen-agers will demonstrate their immigrant parents as living fossiles. This slenderness means individual adaptation. It is likely that infants will, for a great number of generations, be like infants on earth today, though molded by sub G during growth. But we cannot feel sure.

There is no way of knowing what a human embryo will be like under sub G. Gravity may affect sensitive stages of individual development—the forming of the brain, of the heart, and great vessels. It may also affect the fundamental processes of cell replication. We cannot feel one hundred percent sure that the result of a sub G conception will be at all humanlike.

You could speak of high mater-

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nity costs when mothers are to spend their whole pregnancy, or its first three months, in a centrifuge to restore G. Of course studies on mammalian embryos in biosatellites will soon tell us at least a little of what we have to expect in sub G; a need for adaptation, if not for drastic artifices, is likely to be felt under real conditions when our worst apprehensions melt away. Specifically, this means that now living people are likely to meet harsh conditions—perhaps high fetal death on the moon—but a proportion of the survivors will try every simple means to sustain ⅙ G in order to keep personal mobility. We cannot know, but it's a decent guess, that more than fifty percent of the second-generation selenian colonists will feel at home in low G.

High G is something else again. During a long period, that began to end with the arrival of the model T Ford, man tried an upright posture under 1 G, with a lot of success, certainly, but also with a lot of failure. Backache, varicose veins, flat feet are the lot of a numerous minority that would be much better off in 0.6 G. That such conditions won't improve in 2 G goes without saying.

Handpicked pioneers would still meet some straits in high G, but how bad would it really be in, for instance, 2 G? We need not ask the life insurance people to know that it is bad for a 150-pound man to add another 150 pounds to his body weight. But let us see, the usual way to this feat is overeating plus a few fluid calories. Weight, mass and inertia tax the heart, but the human mastodon doesn't possess a healthy heart. It is rather a tortured ball of throbbing flesh weakened by infiltrated fat, embedded in fat, insufficiently nourished with blood. Healthy persons will be far better off under 2 G conditions, adding nothing to their mass, walking surefooted on slippery ground.

Healthy persons are not likely to have much trouble with their blood vessels, which ordinarily have an elasticity granting easy adjustment to moderate increase in G. Erect posture requires many valves in the veins of the legs; the number of these veins vary and other structural variations contribute to a considerable inequality in resistance to postural venous hypertension. Even if colonists are handpicked from people with smooth legs, double G will provoke varicosities in some of them. Though inheritance may play some part in resistance to this specific G damage, the latter is not serious enough to affect the proportion of people with varicose veins in future generations on the high G planet.

The doubled weight of the pregnant uterus could, theoretically, become a more serious matter. Women's health would not be seriously affected, provided that a few simple precautions were undertaken. But, combined with the absent obstetri-

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cal care that marks hard-living tribes today, colonists could face the problem of keeping their number constant. Mismanaged deliveries would, because of frequent uterus displacement, put a limit to the average number of normal births. Good maternity care would greatly reduce such difficulties.

There are few tangible reasons why space colonies need the skills and techniques acquired on earth. But somewhere there's a boundary line between dependence on technology and freedom through adaptation. We send to alien worlds men and women endowed with the finest adaptive powers: human sagacity and drive. These powers will overcome many obstacles—foreseen and unforeseen.

In high G, children will grow up with a formative influence on their bony frame that can hardly fail to affect permanently its shape. For a very long time this will be a matter of individual molding by an environmental factor before infants taken out of high G will reach their normal length. But those who grow up under double G are likely to become bow-legged dwarfs.

This fits some experimental facts and long experience with bone formation under normal and abnormal stresses. But we cannot be dead sure. There are hundreds of minute signs, pointing to a greater adaptability than we make use of on earth.

It has its limits. We have, for instance, no built-in protection against frying temperatures. But fairly effective, within wide limits of outside temperature, our natural thermostat keeps the body temperature within a narrow interval. Some two hundred megayears on dry land formed this mechanism through chance gains and losses of DNA information in the forebears of man. It is not perfect yet, but heat regulating centers at the bottom of the brain answer signals of inconvenience with rather neat adjustments of tiny skin arteries, sweat glands, respiratory volume and metabolic heat production.

Could we settle a planet where the least intractable regions were just a little worse than humid hotholes in the tropics? We could, but we would have to be very careful. At temperatures about normal body temperature humid heat can kill when the body temperature increases to 39 centigrades. Here the sweat glands go on strike and any additional increase in metabolism, or decrease of air flow, can cause a fatal heat stroke.

Africans pay for their dark skin cancer protection with an increased absorption of solar heat. They seem to have a slightly lower heat threshold because of a relatively low body temperature, compared to Europeans. There would be some increased danger of heat stroke for the Africans if they behaved like Europeans in a hot climate. On earth these minor differences, with

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Africans seemingly at a disadvantage, are wholly unimportant. Their existence may point to a possibility of future adjustment.

When the forebears of Europeans left their warm home they did not lose their heat adaptation, though they lost more or less of their ancestors' heat discipline. The common ancestors may not have been darker than the oldest known African pygmy tribes are today, but selectional processes, we can only guess at today, made many African peoples heavily pigmented. Thus they gained protection against the cancer-provoking ultraviolet light from the tropical sun, and lost a little of the reflection in visual and low infrared ranges going with lighter hue.

There seems to be no publicized NASA project for running around naked on a hot planet, so any African disadvantage in heat adaptation will not be conspicuous. Tradition and education made Africans work with cooling pauses, take little salt with their food and drink moderately. Europeans acclimatized in the tropics work, play, drink and sweat a lot more, and take prophylactic salt—perhaps sometimes a trifle more than what is undoubtedly necessary—for this sort of adjustment. Both methods work; it is possible that the low salt intake of all indigenous tropical peoples grants a sometimes vital adrenal gland response, which is suppressed by excessive salt.*

Tribes leaving a wet-hot home for dry-hot savanna and desert met conditions for more effective cooling through sweat evaporation. Volunteers marching naked at Yuma, Arizona, lost three pints of sweat per hour. It goes without saying that such losses affect the water and electrolyte balance. Sweating and drinking wash chlorides out of the body. The resulting cramps in the muscles of limbs and trunk are prevented by salt intake. The brackish water of desert fountains may have saved wandering tribes; again, the shrewd economizing of muscle effort and avoidance of unnecessary exposure to heat have probably always been major factors of survival.

Though inheritable differences in heat adaptation may exist, no very tangible variation has been found within the human species. There is, however, a considerable interspecies variation—notably in water economy. Somalia camels go thirty-five miles per gallon, then much of their total water intake is from plants. The kangaroo rat, another desert dweller, can subsist on dry food. The water their metabolism needs is formed in oxidation of the foodstuffs. After a few megayears on a hot planet we might acquire similar DNA-engraved metabolic programs for survival, but it seems

*This adaptation to low salt diets may, however, be due to the fact that salt is excessively hard to come by in central Africa; Europe being a peninsula surrounded by the salt sea was able to get salt readily—and still it was precious enough so that we speak of a *salary*, and say a man is "worth his salt". Ed.

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highly unlikely that our descendants would permit selection to work against genes now considered normal. Our species has to pay a heavy toll for every—relative—mutational gain.

Cold adaptation is a somewhat different matter. The poor naked prehuman in his tropical Eden had a hard time when the night temperature fell below 25 C. He lost some lean and heavy sleepers of his flock, because their thermostat did not react. In paleolithic man, who was able to modify his personal climate to some extent, a very long process of adjustment had gone before his ruefully inept attempts to conquer the continents. Slowly different patterns of adaptation developed. They contributed, beside clothing and the use of primitive shelter and fire, to the penetration by small and battered flocks into cool highlands and windswept plains.

The Pitjandjara of central Australia, living by virtue of their naked resourcefulness until World War II changed their lot, protected themselves against the biting cold of the desert night by constriction of peripheral blood vessels. Eskimos cannot and need not use this mechanism; in subzero temperatures vasoconstriction could endanger fingers and toes. And they have never lived in paradisaic nakedness in their frosty world. The only extra fat they carry under their skin they have in their faces.

Eskimos keep a high metabolic rate under cold conditions and attain, in this somewhat uneconomic way, a good protection for vital processes. Much, if not all, of this high metabolism has to do with their dietary habits. Arctic Indians have similar metabolic patterns. But, if these groups should be notably successful in the stern Martian climate, it would be because of their technical and mental adaptation to cold. Physiological differences in adaptation patterns exist, but there are hardly any ethnic differences in that respect worth mentioning in view of the Martian colonization project.

Then man is a fairly finished product? The naked, clawless wormeater has graduated from the prey of panther and bear to an egg-headed earl of the galaxy?

No, there are a few steps left for the finished product, quite a few. Superimposed upon species and group adaptations, which are long-range affairs, are individual adjustments notably of endocrine mechanisms. Still speaking of cold adaptation, we should remember that it is not unconditionally vital in the same way as heat adaptation. Under carefully controlled conditions people can be kept at hibernating body temperature. For expeditions outside our planet system it might be economical, and probably completely safe, to keep passengers in a refrigerator or deep freeze.

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Would poison, met in an entirely alien surrounding, reveal more drastically individual adaptive mechanisms of another sort? Eight thousand annual deaths from poison and an additional million of accidents lend some weight to the question. But let us first see how one specific poison, milk, blinds and kills. Infants who lack a specific enzyme, galactose-1-P-uridyl-transferase, accumulate galactose which impairs their liver and eyes and depresses blood glucose, with resulting convulsions and mental retardation. Death from malnutrition may result from continued milk feeding. As soon as milk is withdrawn vomiting and lethargy disappear and the severe consequences are forestalled if this simple measure comes early enough. The enzyme defect is inherited from well parents.

Another specific enzyme defect, that of phenyl-alanine-hydroxylase, causes phenylketonuria, with severe mental retardation if infants with this inherited defect are not taken off milk very early. A third enzyme defect, alactasia or lactose malabsorption, causes diarrhea and lack of weight gain in milk-fed infants. A fourth condition, infantile lactose intolerance, goes with vomiting, wasting and kidney trouble; milk withdrawal is life-saving.

Showing we must take precautions against being poisoned when milking Martian cows? Not exactly, but wait a little. The milk intolerance in these cases falls outside the realms of allergy, as it is generally understood today, but well within the original meaning of that concept: a changed reactivity. More common, than simply inherited, clearcut enzyme defects, is allergic reaction in the form of infantile eczema provoked by milk. The ability to develop sensitization is inherited in a more complicated way. Thus a minority fails in genetic adjustment to a common terrestrial foodstuff.

Hydrogen peroxide foams when applied to a wound, or a drop of blood. The minute H_2O_2 molecule is attacked by a giant enzyme molecule—catalase—which splits off oxygen. Homozygotes for a rare mutant gene lack this enzyme. In acatalasia, as the condition is called, commonly occurring mouth bacteria, that produce H_2O_2 and lack catalase, have free play. Necroses are caused in the gums and often the patients lose their teeth.

It would signify next to nothing that milk and hydrogen peroxide are poisons to some people—as is indeed H_2O when overindulged in —were it not for the occurrence of scores of enzyme defects; each is based on the presence of a mutant gene, usually in duplicate. Taken together these abnormalities are still relatively rare; carriers of one of the mutant genes are not. The continuous generation of such DNA changes, mostly of no known advantage on earth and often harmful in duplicate dose, means that evolution has not stopped harassing the

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feckless conqueror who has spread his spawn over the face of the planet.

He has even used his mutational weakness for this conquest. Tropical malaria may not be older in Africa than agriculture, but, when man penetrated the bush and the rain forest in strength, the malaria parasite found improved conditions and started killing on a scale that could parallel what would happen to unprotected invaders meeting an entirely new disease agent on a new planet. However, infants and small children, who carried a mutant gene that changed part of their red blood pigment to the form called S, survived until they had acquired immunologic resistance to the malaria parasite. In heavily infested regions such children had a somewhat increased chance of reaching reproductive age. A minute advantage for that type was enough to further this type of hemoglobin. It would, in a few hundred years, have become the norm in hyperendemic malaria regions if it had not been braked by its innate propensity for killing children when taking over completely from normal blood pigment. This is the case when the mutant gene is present in duplicate, i.e. homozygous, dose.

Other simply inherited blood abnormalities convey increased resistance to tropical and other forms of malaria. An enzyme defect, that of glucose-6-phosphate dehydrogenase, fits into this pattern of nonimmunologic resistance in some Mediterranean regions. As always, gains of this type are paid for with losses. An old Latin proverb advises against beans. In enzyme-deficient people bean protein provokes crises of blood destruction. The mutant gene is carried by the X chromosome. As it is quite common in some ancient malaria regions women quite often become homozygotes and share the burden of sensitivity to beans and, it may be added, to a number of drugs.

Though the number of such relatively well-analyzed situations is still limited, we have fair reason to think that mutant genes endow their bearers with some advantage in some—perhaps rather extreme —situations of exposure to noxious substances, parasites or physical damage. Something like this is highly suspected for a number of genes, including those of the blood groups, which are now of common occurrence in human populations though counterbalanced and prevented from attaining sole prevalence.

We might meet on some distant planet viruses, or infective nucleic acids, that will attack new arrivals with the outstanding success of black death, measles among unprotected Arctic and Oceanic tribes, or tropical malaria in Africa. But infectious agents, that tend to overkill, eradicate themselves.

By ideal adaptation, between host and parasite, the latter makes

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little more than a nuisance of itself. The second best tactic to attain planetary prevalence is to become a louse on man.

We shall carry to new worlds our frailties, and we shall stumble blindly into dangers that will reveal hidden weaknesses in our biologic armor. It was always like that.

Man never sent the best of his breeding to lands beyond glaciers and foaming seas. Those sent were ugly albino-like misfits, fierce troublemakers, lords of red rage. Nice people stayed in warm and tepid regions, but change came over them. Climatic catastrophes, floods and droughts crushed in their clutches not the weak, but people with concealed DNA flaws that meant insufficient adjustment to completely new environmental stresses. In some situations, such as those of new infections, the carriers of otherwise detrimental DNA information became the survivors.

Then there were always specific, multipurpose adaptive mechanisms the clawless, shieldless biped shared with nobody. He had visions. He grasped for the moon to eat it, but only once. He learned. He was sagacious and goal-directed. He could improvise, reinvent the tools of his naked ancestors. And he owned some DNA-tagged cybernetic mechanism with a concealed target that drove him on and on, over steppes and glaciers and tundras, dismayed, unfit, desperate, dreaming of new land to take and new worlds to conquer. ■

IN TIMES TO COME

Next month's feature novelette is "Of Terrans Bearing Gifts," a short treatise on the subject of looking gift horses in the grinders very carefully. The Terrans were kind, generous, happy to share their magnificent technology—wise, and . . . also wily.

They had a technology and gifts to give beyond the dreams of any ordinary nuclear-energy level technological culture. They were willing—nay, anxious!—to give those gifts.

But it was quite an education. And like an education, even one freely given, the gifts they gave could be appreciated without a deep sense of pain, loss, fear-of-the-future, conviction of loss of self-identity, and feeling of being dragged through chaos on the end of a rope only after—preferably long after—the event.

Ah, yes—everybody knows education is a great thing for the other guy to *get* and for me to *have*.

Now what better military weapon could any general ask for his troops than an individual, instantaneous teleporting device?

Like maybe a device to keep them from instantaneously, individually, teleporting AWOL beyond hope of recovery? ■ THE EDITOR.

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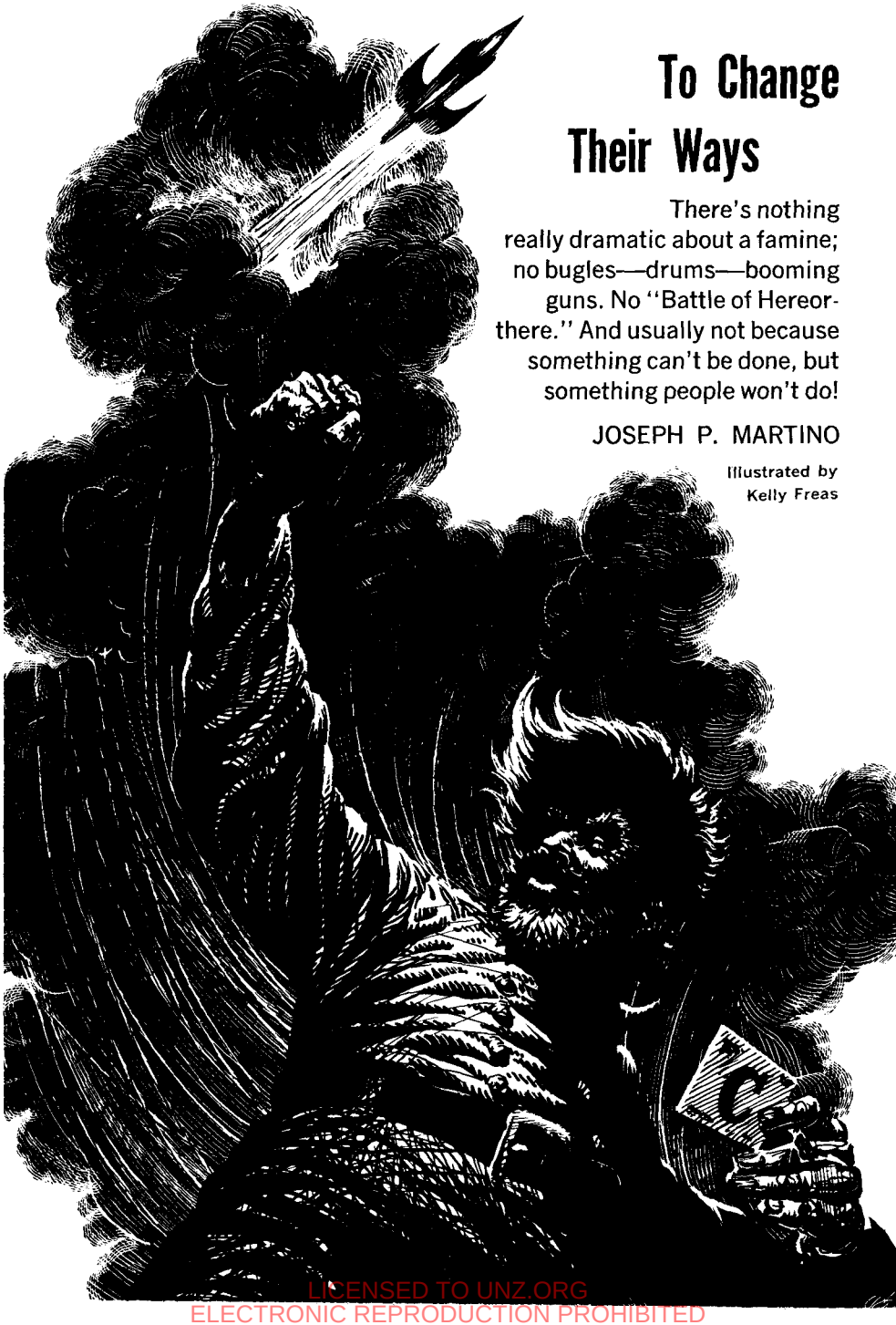

To Change Their Ways

There's nothing really dramatic about a famine; no bugles—drums—booming guns. No "Battle of Hereor-there." And usually not because something can't be done, but something people won't do!

JOSEPH P. MARTINO

Illustrated by Kelly Freas

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The little one-man scout cruiser flickered out of overdrive and hung in the blackness of space. The star-trackers scanned the sky, and locked onto the half-dozen brightest stars. The navigation computer verified that their spectral signatures and relative bearings matched the stars which should have been visible from the place the cruiser was supposed to be. Satisfied that the cruiser had reached its programmed destination, the computer switched on the manual-control panel and started the green light at the top of the panel blinking, to signal the craft's lone occupant that he was now in control.

Wilm Kirsten, Colonial Administration Sector Supervisor, acknowledged the blinking light by slapping his hand down over it, activating a capacity-operated relay which shut off the light and put the control panel on standby. Just because the computer was impatient was no reason for him to be rushed. He crossed the cabin and sat down before the display screen of the cruiser's automatic library.

He rested his hand on the switch and examined the weather-beaten face which stared back at him from the silvery screen. He decided the wrinkles around his eyes were getting wrinkles. His eyes looked tired, but his eighty-five kilograms of body mass still looked solid, with no traces of fat or slackness. It was hard to tell, but his still-black hair seemed even thinner than it had been six months ago, when he had set out on this inspection trip.

The schedule had called for visits to five colonies, spending one month on each. But, of course, nothing had gone according to schedule. On each of the first three planets, the Planetary Administrator was up to his ears in trouble, and it had taken an average of two months to get things under control. So here he was, just getting to the fourth planet, when he should have been home a month. He knew his wife Marth would understand, but it still wasn't fair to her. For the thousandth time he decided to put in his application for transfer to a desk job with the Colonial Administration back on Terra. Perhaps, he thought, this planet can be finished up quickly. He shoved the switch home with unnecessary force, and watched the silvery screen become milky, then clear white.

The information package about the next planet on his schedule, reconstituted from the microrecordings in the cruiser's library, appeared page by page on the screen. He had, of course, reviewed it before he left Sector Headquarters, but a last-minute study helped sort it out from all the records he had reviewed about all the other planets he had to visit.

The planet itself had been named New Eden by its original colonists, the Sons of Freedom. That, he reflected, was encouraging. The Sons of Freedom had been pretty fana-

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tic in some respects, but their record of success at planting colonies was good. Of the six they were known to have planted before their organization fell apart, only one had failed. New Eden's planetary mass was approximately the same as that of Terra, with a gravity only slightly higher than Terran—atmosphere, well within tolerable limits. The primary was a main sequence blue star of spectral class B. With an orbital radius of approximately seventy Astronomical units, New Eden enjoyed a temperature slightly higher than that of Terra, and had no permanent ice caps. At that radius, of course, the primary did not present a perceptible disk, and was just a bright point. How, he wondered, had a young star like that managed to acquire planets? But he dismissed the thought. That was for the cosmologists to worry about. It had a planet, and he had to see that the colony on it was prospering.

The colony had been planted in 2145, shortly before the Sons of Freedom disintegrated in 2150. The colony had been out of touch with Terra for a century, being rediscovered in 2249. The colony had grown in the interim, its present population being roughly a hundred thousand. A Planetary Administrator had been installed almost exactly a year ago, in 2250. And the Sector Supervisor was finally making his first visit to New Eden.

The Planetary Administrator, Kral Mirok, was a native of Terra, and a graduate of North American University, with a major in Public Administration. That brought a scowl to Wilm Kirsten's face. North American University was known for turning out bright young men with a desire to Serve Mankind, and to bring the Benefits of Terran Civilization to the Colonies. And to make matters worse, Mirok was only twenty-five standard years of age, and this was his first assignment with the Colonial Administration. Kirsten had a sinking feeling that he wasn't going to be leaving New Eden in a month.

He re-crossed the cabin, sat in the pilot's chair, and brought the manual control panel to life. While the autopilot had brought him to the right star, the planet itself still had to be found. Apparently the tables giving the proper motion of the star, and the orbit of New Eden, were fairly correct. The star-trackers had picked up something moving across the sky too fast to be a star, and had verified that it was at the right distance from the primary to be New Eden. Furthermore, it was only a few light-minutes off. He set the manual controls and made three micro-jumps, the last bringing him out less than one planetary diameter off-world, on the sunward side. A radar transponder near the sunrise line located the spaceport for him, and as he switched on his communicator, he found his arrival had been expected.

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". . . Recording. This is a recording. Message for Sector Supervisor Kirsten. Please use your personal code, and give your estimated time of arrival at the spaceport. You will be met and brought to my office. Planetary Administrator Mirok signing off. This is a . . ."

Kirsten punched the transmitter button, keyed his personal code, and added that he would be down about three hours after sunrise. That, he felt, would give Mirok time to get his desk cleared of the day's trivia. Besides, he thought, there's no point in dropping in on him before breakfast. And it would give Kirsten a chance to circle the planet a couple of times and look it over before landing. He cut a program tape for the gravity-modulation drive which would put him in a spiral around the planet, ending over the spaceport in just short of three hours. Then he went to pack and catch a short nap, since this was going to be a long day.

Nearly three hours later, he was back at the viewscreen, looking at the surface of New Eden. The planet had the usual assortment of prairies, rivers, deserts, mountains, oceans and forests. Most of the land surface was covered with greenery of some sort, and showed absolutely no sign of human presence. Only around the original settlement site did the land have the disciplined appearance of cultivation.

The checkerboard patterns of cultivated fields flowed along the rivers and through the valleys, spread out on both sides of mountain spurs, hugged the edge of cliffs, and sprawled out over several thousand square kilometers as though expanding along the lines of least resistance. Small villages dotted the area at random, connected by winding roads which all led to a centrally located town adjacent to the spaceport.

As he increased the magnification of the viewscreen, Wilm Kirsten was treated to the odd sight of crops in adjacent fields being in different stages of growth. In fact, a frequent sight was a farmer cultivating a field with a horse-drawn plow; in the next field another farmer was driving a horse-drawn reaper, while other fields varied from young green sprouts through ripening grain to stubble.

His examination of the planet was brought to an end by the landing alarm. He strapped himself into the pilot's chair, and prepared to override the autopilot in the unlikely event that it failed during the landing. However, it brought him down gently, as it had done in every one of the dozens of landings it had made since he had been promoted from Planetary Administrator to Assistant Sector Supervisor, over ten years before. Despite the fact that as Sector Supervisor he was now authorized a newer and more luxurious craft, he had decided to stick with his older one. Confidence in an autopilot was to him of great-

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er importance than luxurious fittings. Safely down, he unstrapped himself, unsealed the port, and looked out.

The spaceport was a barren expanse of concrete, broken only by the beacon tower at one corner. It had clearly been built only two years before, shortly after the first survey party had rediscovered New Eden. Kirsten noted, to his surprise, a considerable number of landing-jack scars on the concrete, some from quite sizable vessels. Evidently New Eden had developed an export trade, although the files didn't mention it.

His attention was suddenly drawn to a movement at the edge of the field as a small contra-gravity passenger car jumped aloft and sped toward his cruiser. He grabbed his bag and climbed down the ladder as the car reached him. He turned to see it drop free for about twenty meters, brake suddenly near the ground, hover a handsbreadth off the concrete, then come to rest.

A coverall-clad youth leaned out and spoke in a version of Standard Terran which gave clear evidence of a century's isolation from the speech of the mother world.

"Y'r Mr. Kirsten, are ye?"

"Yes, I am."

"Mr. Mirok sent me to fetch ye. Climb in."

Kirsten threw his bag into the back seat and climbed over the side of the car. The youth extended his hand.

"I'm Jarel Makardy, Mr. Kirsten. I'm mighty pleased to meet ye."

"It's a pleasure to meet you, Jarel. Now let's be on our way."

Jarel launched the car into the air. Kirsten felt the tug of acceleration in the pit of his stomach, then noticed that the car's internal field control was set to nullify only two thirds of the car's acceleration. Apparently Jarel liked the sensation of motion, or perhaps he didn't feel right about riding in a vehicle which felt as though it were standing still.

"How long have you been driving this car, Jarel?"

"Just over two months, Mr. Kirsten. Mr. Mirok says he needs someone who knows his way around here to drive for him."

"Do you drive this way for him?"

"No, Mr. Kirsten, he don't like for me to start and stop so fast. Y'won't tell on me, will ye?"

"No, I won't, Jarel, but I'm not sure I care for that much acceleration either." With that, he reached across the seat and turned the internal field up to full neutralization. "Now before we go to see Mr. Mirok, how about giving me a look at the town?"

"Yes, sir, Mr. Kirsten." Jarel slowed the car smoothly, and swung it in a wide arc around the edge of the town.

The town was bisected by a river which flowed on toward the horizon, and disappeared through a gap in a distant range of hills. The

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streets of the town appeared to be paved with cobblestones, and were laid out in a rectangular grid with its long axis parallel to the river. Most of the cross-streets ended in docks which projected out over the river. Two of the broader ones, however, were carried across the river on stone bridges. The buildings seemed to be mostly one- and two-story structures. While there were a few wooden buildings, especially along the river, the majority were of stone. Slate roofs seemed to predominate, although there were some roofs which were clearly made of copper. Evidently quarrying, lumbering, mining and smelting were all practiced by the natives of New Eden. Kirsten noticed that one of the buildings was topped by a tall steeple which had some sort of a balcony around the top.

"What's that building over there, Jarel? The one with that tall steeple on it?"

"That's the Town Hall, Mr. Kirsten. The mayor has his office there. Mr. Mirok's office is just across the street. That tower once was used by fire-watchers, before they passed a law that all new houses had to be made of stone. Main Street leads right past the Town Hall and down to the Main Street Landing, where the passenger boats from up- and down-river stop. And can ye see those warehouses farther down the river? That's where the barges used to come in with flour from the farms upriver, and with coal and metals from the mines and smithies downriver. All the smithies are just beyond those hills. If ye look careful, ye'll just make out some smoke. But the hills keep the smoke away from the city. Or they used to, before the weather changed."

"Is this town your home, Jarel?"

"No, sir, I come from upriver, in Makardysville. My Gran'pappy, Enos Makardy, first settled about eighty kilos up the river. My Pappy still owns the farm, and my oldest brother Jed'll get it, if anyone does. I was going to go farther up the river and claim some land for myself, when things started changing, so I came down here to Center City instead. I was going to go to work in the smithies. They're always looking for people to learn the metalworking trades. But I ended up driving this fancy buggy for Mr. Mirok. Now I'd better take ye to see Mr. Mirok right away. He told me he was anxious to see ye."

Jarel headed the car straight for the Town Hall, lowered the car smoothly between the buildings, and held it hovering just off the cobblestones.

"His office is right in there, Mr. Kirsten," he said, indicating a building across the street from the town hall. "Just go on in. He told me to take your bags to the same inn he stays at. He says the food's good there, and the beds're clean. I'll be right back to take ye wherever ye want to go."

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Wilm Kirsten entered the solid-looking, but unprepossessing, two-story building Jarel had indicated. There were four offices on the first floor, with signs on the doors indicating they were occupied by two doctors, a lawyer, and a land surveyor. A sign reading PLANETARY ADMINISTRATOR pointed up the stairs. He climbed the stairs and entered the only open door there. As he stopped to look around, he heard voices coming through the open door of an inner office.

". . . Can't help it, Mr. Mirok, the mayor says he don't want the job of passing out ration cards to all the farmers. He says for the city people it was O.K., but his authority stops at the town line. He says you'll have to do it yourself."

"But I've told him I'm not supposed to get that deeply involved in the affairs of the local government. It's not my responsibility. Well, see to getting them printed up anyway, and we'll work out the distribution problems later."

At that point two men stepped through the door from the inner office. One, appearing slightly older than the other, was dressed as a native of New Eden. He appeared to move slowly, and to be unsure of himself. The other was dressed in clothing obviously brought from Terra, and radiated an aura of tension and barely suppressed movement. He spoke when he saw Kirsten.

"You're Supervisor Kirsten? I'm Kral Mirok, the Planetary Administrator. I'm certainly glad to see you. Ever since the message arrived six months ago, announcing your arrival, I've been looking forward to your visit. I've got some problems they never mentioned in school, and I need help badly."

Kirsten, his intuition of trouble confirmed, followed Mirok into the latter's office. "What's this about ration cards? Is that one of your problems?"

"All the problems are tangled up together. We need the ration cards, because there's a food shortage which is going to get even worse before . . ."

"Food shortage! But how? I tried to take a good look at the planet as I came in, and I saw plenty of food being grown. There're fields being harvested all over the settled area, with more being planted. Incidentally, what's the reason for simultaneous planting and harvesting?"

"That's because of the . . . Look, maybe it'll simplify things if I start from the beginning and tell the whole story, instead of trying to answer your questions one at a time."

Kirsten sat down in a large cane-bottomed chair, which despite its primitive appearance turned out to be quite comfortable, and leaned back. "You're probably right. Go ahead and tell it your way."

Mirok sat down behind a massive desk made of some dark wood

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which looked as though it would take a high polish if only someone would remove the scars, scratches and ground-in dust. "Yes, sir. To start with, New Eden has an orbital period around its primary of about two Terran centuries. This means, as far as humans are concerned, that there is no planting or harvesting season; or more properly, any season has to be planting season or harvesting season. So the colonists quite early adopted the practice of planting small fields of wheat at short intervals, so that at any time you could find wheat in all stages of growth. This had the additional advantage that it smoothed out the farmers' workload, instead of peaking the workload at planting and harvesting times. In addition, it eliminated the need to store grain for long periods. Current production was always just ahead of current consumption, to allow for occasional bad crops.

"Originally the farmers would harvest at any one time just enough grain to feed themselves for a few days. They would carry this to a mill, where it was ground into flour. Then the farmer's wife would bake bread, make noodles, and so on. When small manufacturing centers started to grow up, the farmers modified their practices only slightly. They brought their excess flour to the markets, to barter for tools, cloth, and so on. Of course, the people here didn't have to invent the concept of money, they had brought the notion from Terra with them, so a mint was established to produce gold and copper coins. The farmers sold their flour for money, and bought what they needed. That's essentially the way the economy worked up until a year or so ago. Of course, I haven't given you all the ramifications, since there is mining, cotton-growing, metalworking, lumbering, and so on, besides food-raising.

"The long orbital period of New Eden had another effect which isn't obvious at first. The daily solar energy input at any given latitude is essentially constant over a period measured in Terran years. This means that the weather settles down into a steady pattern which just repeats itself over and over, since there aren't any changes in the solar input to alter the weather patterns. You'd have to keep careful records over several years to detect any changes at all.

"As it turned out, this colony was planted in the northern hemisphere of New Eden, about the middle of autumn. At this latitude, winter settled in within a few years after the colony was planted. Winter, of course, is pretty mild here. The winter weather pattern involves a cyclone passage every eight days, with a soaking rain which lasts about a day. The other seven days are essentially clear, except for pre- and post-cyclone clouds. They built this regular pattern into their calendar, which has eight-day weeks,

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four weeks to a month, and twelve months to a year. The rain always came on Firsday, which was a day of rest. The next day, Seconday, the fields were too wet to work, so that was marketing day. Thirday they sprayed the fields to kill the weeds. And so on. Harvesting was done on Lasday, just before the rain.

"Things had been going on in this pattern for almost a century. But shortly after I landed here, spring arrived. The regular cyclone pattern was disrupted. That brought part of the problem. Instead of the regular cyclonic rains of the winter, we get frontal storms at irregular intervals. And several days after a cold front passage, we start to get the typical afternoon buildups of cumulonimbus clouds, with local storms. While there have been some weeks without any rain at all, most weeks we get too much rain, and the soil is waterlogged. That has cut the yield somewhat.

"And another factor entered to cut it down even more. New Eden has an orbit which is slightly eccentric. During the northern hemisphere's winter, the planet is closer to its primary than it is during the summer. This tends to keep the year-round temperature in this hemisphere more constant than it is, say, on Terra. In fact, there is some degree of overcompensation. At this latitude, the summer will average about five degrees cooler than the winter."

Wilm Kirsten broke in. "That sounds like the Sons of Freedom at work again. Whatever else you can say about them, they knew how to plant a colony."

"That's what has puzzled me. Whatever became of them, if they had so much competence?"

"Didn't you learn about them in school? Whatever do they teach you young people these days? Well, never mind, what happened to them was about what you'd expect to happen to a group bent on colonization. Those who were serious emigrated, the half-hearted dropped out, and the organization disintegrated. I've always been amazed that they managed to plant as many colonies as they did, before they broke up."

"I see," replied the younger man. "And, of course, there was no Colonial Administration then to take care of these colonies when the Sons of Freedom weren't able to. Just think, these poor people have been out of touch with Terra for a whole century. It's a wonder they didn't give up in despair. Well anyway, the wheat they grow is a special mutated variety. It was developed about a century and a half ago, just after the start of interstellar travel. It was developed to be insensitive to the day-night ratio, and to the summer-winter cycle. It matures when the temperature is high enough. It was intended to be usable on planets with almost any reasonable degree of axial tilt. The

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Sons of Freedom evidently realized it was well suited for New Eden, where the day-night ratio is essentially constant over the growing period of the wheat, and there is never any frost.

"Unfortunately, the wheat turns out to be quite sensitive to temperature, which is why it was never widely adopted for colonial use. The five degrees lower average temperature doesn't sound like much, but it makes all the difference in the galaxy to the wheat. It just won't mature at the lower temperature. Already the drop in temperature has cut the yield somewhat, and in no small number of cases the crops have rotted in the field instead of maturing. The farmers have stopped bringing flour to market, except when they absolutely need something in return. And without the flour from the farms, the city people would have starved already. So I've been using my emergency funds to import flour to feed the non-farmers. I had to set up a system of rationing, to assure fair distribution. And when the farmers' crop yields drop below subsistence level, I'll have to feed them, too. So they'll need ration cards, and as you heard, there is going to be some problem in getting them issued. The planet has no central government, and my office is the only one with any planet-wide authority at all. But I'm not supposed to get that involved in local affairs."

"You mean you've been bringing in food to feed these townsmen already, and you're planning to feed the farmers as well?"

"Well, of course. After all, they are human beings. We can't just let them starve. But my emergency funds aren't sufficient to take care of the whole planetary population for more than a few months. I'll need help from you to get more food imported, and to find some fair way to distribute it."

"But you can't import food to feed the whole population for the next century, until the weather warms up and they can grow wheat again. Did it ever occur to you that they might grow something else?"

"Yes, sir. I thought of that. I searched the records, and found that there was a colony on a planet with almost no axial tilt and a circular orbit, which was growing this mutated wheat. There, of course, the average daily temperature varies with the latitude. So I bought some seed grain from a latitude where the temperature corresponded to the summer temperature here. I brought in enough seed to last for one whole planting season, thinking that after that the farmers would be producing their own seed grain. I even hired some farmers to work demonstration fields of the new wheat. I figured that once the people saw that it gave a better yield than the wheat they were trying to grow, they'd adopt it. But they didn't. They'd

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rather struggle with the old variety, getting less and less yield every month."

"How did you get any farmers who were willing to use it on the demonstration plots?"

"I found some whose crops had failed already. I figured that would make an even more convincing demonstration. If these people could make the new wheat grow, then surely the others could."

"But it didn't work out that way? Well, what went wrong?"

"The trouble is, these farmers are the most stubborn, reactionary, tradition-bound people I've ever seen. They just refuse . . ." He got up and glanced out the window. "Look, I can't describe them. You'll have to see them for yourself. Jarel is back with the car; why don't we go talk to some of them. Then you'll see what went wrong."

They went out to the car, where Jarel was waiting, and climbed in.

"Jarel, please take us to see Abram Leontus, out west of town." He turned to Kirsten and spoke, almost as if to himself. "I just don't understand these people. I want so much to help them, but they won't listen to me. Nobody ever mentioned things like this in school." Kirsten made no reply, so he lapsed into silence.

Kirsten looked at the landscape more closely, as they left the city. Now that he knew what to look for, he could see that in many of the fields the wheat was not maturing properly, and in some it had started to wither and wilt before maturity. Some fields had obviously been abandoned, and here and there recently-vacated farmhouses could be seen. Among the abandoned fields, though, there were fields where the wheat still appeared to be growing well, although it was impossible to tell how much grain these fields would yield. They appeared to be heading for a cluster of such fields, near the middle of which Kirsten could see a man plowing a field with a team of horses.

Mirok had been examining the countryside with a pair of binoculars. He lowered them and pointed ahead. "That's old Abram out there in the field, plowing. Today is Sixday, the traditional day for plowing, followed by planting on Sevenday, so that the seed will be in the ground when it rains on Firsday. It rained yesterday in this area, so the ground really is too wet to work, and it probably won't rain on Firsday, but Abram Leontus is going to plow on the traditional day, regardless. He's done it all his life, and isn't going to change now."

Within seconds Jarel had set the car down gently at the end of the field the old man was plowing. Kral Mirok got out and waited as Leontus approached, turned the horses around, then stopped and faced the younger man, waiting.

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Kirsten, who had remained in the car, studied Abram Leontus carefully. His bushy white hair attested to his age. Long years of toil had marked his tall, gaunt frame. The faded and worn black coveralls he wore added to his ancient appearance. His burning black eyes, however, were undimmed by the years he had seen. They bespoke a vigorous and powerful spirit which still animated the aged flesh.

Kral Mirok spoke first. "Good morning, Mr. Leontus."

"Good morning, Kral," the old man replied, in coldly polite tones. "Why have ye come here today?"

"As always, to try to help you." He made a gesture which took in the bare field behind the old farmer. "You are working very hard on this field. It would be a shame if that work went for nothing; if the crops you plant were to rot instead of ripening."

"None of my crops've rotted yet."

"But the crops of many of your neighbors have rotted instead of ripening. It may happen to yours, too. That's why I've brought in a new variety of wheat, that can grow at these lower temperatures. If you were to grow it, you could be sure that your hard work here wouldn't go to waste."

"I've tasted that new wheat. I don't like it. It don't taste right. The bread it makes don't fill your stomach. The noodles it makes are a dirty gray, instead of yellow."

"I realize that it may taste a bit different from the wheat you've been growing, but you could get used to that. And the demonstration plots should have shown you that it does give a good yield."

"Ye mean those fields ye had worked by those farmers whose crops had already failed? It's no wonder they couldn't grow wheat. They didn't even know enough to spray the fields to kill the weeds. Ye think they had anything to teach me? Take a look at my fields. Not a weed anywhere. My crops are still growing well enough to keep my family fed."

"But no longer enough to feed the townspeople, too. It's been several weeks since you sold any flour in the market. I've told you about the eccentric orbit this planet has. The temperature is going to drop a few more degrees. Your fields are going to yield less and less, until you won't be able to feed yourselves."

"I've heard ye talk about that orbit business. I don't believe it. My Pappy and my Gran'pappy told me the weather here has been the same since as far back as they could remember. The weather was all right until a year or so ago, when your spaceships came here and upset it. Don't tell me about orbits. Ye came here and caused this bad weather. Why'd ye have to come anyway?"

"We want to bring you the benefits of Terran civilization. With

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modern technology, you won't have to work so hard, and you'll live better."

"Ye don't have to tell me about Terra. My Gran'pappy told me all about it when I was a mere young-'un. Everybody crammed cheek-by jowl into the cities. No privacy. All kinds of rules and regulations to keep ye from stepping all over each other. Everything standardized. Standardized food, standardized fun, standardized apartments for everyone. And all the time running around, hurrying back and forth. And outside the cities? Hardly any people. Big mechanized farms growing food for people who've lost contact with the soil. Ain't no fit life for human beings. We've left that behind and we want none of it."

"But we're not trying to impose regulations on you—just trying to help you to a better way of life."

"Ye do pretty well without trying, then. Look at the townspeople. They can't eat without a ration card. And they can't get a card without someone snooping around to see how much food they need, and if they're keeping all the rules about how to use the cards. I want ye to go away, so the weather can get back to normal and we can grow enough food to feed the townspeople. I can't order ye off the planet, but at least I can tell ye to get off my land. Now go." With that he turned back to his horses and picked up the reins.

Kral Mirok, with as much dignity as he could muster, climbed back into the car. Jarel, without orders, swept the car smoothly into the sky and turned it towards Center City.

Kral spoke, morosely. "Now you have some idea of what I'm up against. Would you like to meet his oldest son, Efram, to see what the next younger generation is like? He's just as stubborn as his father, except that he hasn't had as much practice. He makes up for it by trying harder."

"Never mind. One sample of the family is enough. Is Abram Leontus always that resistant?"

"Yes. He just won't change his ways, and he rejects all my efforts to help. I have to give him his due, of course. He is one of the best farmers around here. He's still managing to grow food after a lot of the others have quit."

"So I gathered. Incidentally, what's this business about weeds? He seems to place a lot of emphasis on it."

"Under normal conditions you don't want weeds growing in your wheat fields. They take water which the wheat needs out of the soil, and cut the yield. Customary practice here is to spray regularly with a weed-killer that doesn't harm the wheat. However, with the extra rain that we've been having, the soil gets waterlogged if something isn't done about it. Letting the weeds grow increases the rate

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of water loss from the soil. So I had my demonstration farmers allow the weeds to grow, and knock them down with spray just before the harvest. Unfortunately, killing the weeds is sanctified by tradition, and farmers like old Leontus won't hold for any deviations from the Right Way to Grow Wheat." The capital letters were clearly audible through the scorn in his voice.

"Seems like they'd be interested in a method of farming which cut their work by eliminating spraying."

"Well, it isn't really eliminated. The new wheat is not immune to a local plant rust, as the old wheat is. They have to spray for that every week. So there's really very little net saving in labor."

"All right, I can see you have some problems. Not even good farmers like Leontus are going to make the old wheat grow indefinitely. And they refuse to change their ways. Here you have the conservatism you normally expect in a rural community, reinforced by the anti-Terran and anti-government attitudes inherited from the Sons of Freedom. It's a hard combination to crack."

Kral Mirok burst out: "That's another thing that makes me mad. Leontus claims he knows all about Terra. But his grandfather was all of ten years old when he emigrated from Terra a century ago. He didn't really know much about the planet as it was then, and it has improved somewhat since then. I admit that with twenty billion people on it, it could get crowded. But except for the small number of people engaged in operating the mechanized farms, they're all in the cities. Except for the metropolitan areas, most of the land surface of the planet is maintained as parkland or camping area. Even the farming areas have little parks set aside here and there. Every year my family spent our legally allotted two weeks in some remote area, like the Rocky Mountains, the Great Barrier Reef, or the Russian Steppes. Under the law, every person on the planet is allowed two weeks every year in some remote area, without another human within miles. We always enjoyed it, even though we were glad to get back to the cities and people again."

"Granted that he's got some wrong notions about Terra, you'd better forget about that. Even if you could educate him to the truth, which isn't likely, he'd have starved to death first. Incidentally, why is it so important to convince him? How about the rest of the farmers?"

"He's really the key to this whole area. He has over a hundred adult grandchildren living around here, not to mention several times that many grandnieces and nephews who defer to him as the head of the family. And, of course, there're many more people remotely related by marriage who look on him as a local leader. If I could win

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him over, the rest of the area would go along, too. If I don't win him over, there's no point in dealing with the rest of them."

"And, if you can't win him over, you'll go ahead with your plans to bring in flour and feed the whole planet?"

"What else can I do? It's not right to let them starve."

"Even when that starvation results directly from their own stubbornness? Is it right to burden the taxpayers of the Confederation with these people?"

"Well, you've got a point there, but you can't change the mind of a dead man. If we feed them, there's the chance we can change their minds later. And besides, how about the children? They're not responsible for their elders' ideas. It's not right to let them starve for something they cannot control."

"You're quibbling. If the elders have no concern for their own children, why should you? And besides, the sight of the children going hungry might get some of them to change their minds."

Mirok shuddered visibly. "No. I couldn't be that cruel. I couldn't."

"Your cruelty, or lack of it, has very little to do with the matter. Suppose we hadn't rediscovered this place two years ago. The people in the cities would certainly have starved to death already, and the farmers whose crops had failed would have become marauders, preying on the rest. The Universe is a cruel place, especially if you try to work against it instead of with it. It's not as though I'm suggesting that you take away their food. The Universe is already doing that. I'm simply suggesting that you let nature take its course."

"Well, I can't do it. I'm going to feed them as long as I can."

"That won't be long. Your emergency funds are going to run out soon, and I'm not going to supplement them. You'd better think of something else. There must be some way you can get some leverage over these people."

"You mean use coercion of some kind? It won't work. You'd need a corps of inspectors watching over every farmer on the planet, to see that he used the proper farming practices, and you'd end up with a planet full of slaves, whose every move has to be monitored. We'd need several divisions of troops to police the place."

"Well, that's progress. At least your objections are now practical instead of moralistic. I suspect you could monitor the farmers' conformance to your rules for growing the new wheat rather simply, though. On an infrared aerial photo, the fields of wheat afflicted by rust would probably stand out in sharp contrast to the rest. So you'd spot immediately the farmers who are doing things your way, and those who are doing things the traditional way."

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"Maybe you're right. If so, I could photograph the whole settled area within a few hours, say once a week. But that still doesn't solve the problem of making those who refuse to change their ways, do so."

"Look, I'm telling you, those who don't change their ways are going to starve, since I'm going to see to it that you can't continue to feed them. The choice, as I see it, is to let the whole planet starve when your flour runs out, or to let those who don't change their ways start starving as soon as their yield of the old wheat drops below the subsistence level."

"Are you suggesting that I issue flour only to those who start growing the new wheat? That's a horrible position to put them in. They'd be living from week to week, knowing that they live or die depending on whether or not they satisfy me continually. It'd destroy their self-respect. It would defeat everything I came out here to do."

"Letting them starve would defeat it, too."

"All right, suppose I try it, and still run out of flour before the first crop comes in. What then? I'd have put them in a position of subjection to me, and all for nothing."

"Don't worry, if you look like you're going to run out of flour, I'll release some more funds. No one who is serious about changing his ways is going to starve. But I'm not going to see this whole planet put on a dole because the people are too stubborn to adapt to changed conditions."

"I'll have to think about it." Mirok lapsed into silence, but Kirsten felt he had been won over. It would take some deep soul-searching to overcome the so-called social conscience that North American University had drilled into him, but he'd manage.

Wilm Kirsten leaned back in the comfortable, cane-bottomed chair he had appropriated for his own, propped his feet up on the desk he had brought into Kral Mirok's office, and looked at the calendar on the wall. Six of New Eden's weeks had been crossed off, day by day, since he had arrived. Many times during those weeks he had been sorely tempted to leave for the next, and last, planet on his schedule.

After all, Kral had quickly come around and seen the sense of using the flour ration as a lever to get the farmers to plant the new wheat. Then he had done a magnificent job of organizing training centers at which the farmers, who had operated the demonstration plots, could pass on to the rest the knowledge they had acquired. He had also done a marvelous job of arranging loans and credit right from the spaceport, through a chain of middlemen, to the individual farmers who would buy seed grain and spray for the plant rust, as well as for the flour they would consume.

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The importation and distribution of these items could go ahead with practically no disruption of the planet's economic system. In fact, most of the debts would be liquidated eventually by sale of flour offworld when the new crops came in, reducing the total drain on the Colonial Administration's funds to practically nothing. Finally, Kral had taken charge of the infrared aerial survey program himself, taking the photos every week from his contra-gravity car.

Not that everyone had gone along with the program, of course. The younger people, of Jarel's generation, had switched to the new wheat almost without a murmur. Their parents, of Efram Leontus' generation, were another matter. They were growing the new wheat, but with ill grace and grudging compliance. Mirok received nothing but black looks from them as he made his weekly rounds supervising the issuance of ration cards. They would go along while they needed his flour, but as soon as this freak weather ended, they would go back to the Ways they knew were Right.

Most of the older people, of Abram Leontus' generation, had simply refused to grow the new wheat, and were still trying to grow the old, even though their crop yields had fallen to practically nothing. Not that they were going hungry. Their children were generally sharing their rations with their parents. The flour ratio had been set high enough to allow this, since there would have to be something wrong with children who didn't care for their parents, even when the parents' trouble was due to their own stubbornness. Cutting the rations to prevent this practice would only mean a shortage for those who, after all, were growing the new wheat. However, despite the few holdouts and the many unwilling cooperators, nothing had really gone wrong.

Surely, Kirsten kept telling himself, things were under control, and his presence was no longer needed, while there was no telling what kind of trouble might be brewing on the next planet. The sooner he arrived there, the sooner it would be cured. But there was still a nagging feeling of doubt. Things had been too easy. The program here on New Eden hadn't had its first crisis yet. He sighed and decided again that he'd better stick around a bit longer. He sat up at the desk again, and continued to leaf through the stack of aerial photos Kral had taken the day before.

Suddenly he dropped the stack on the desk and stared at the next photo. There, right in the middle of the picture, was a field which appeared almost black by contrast with the lighter fields surrounding it. He got up and walked to the large photomap on the wall. He checked the location, on the chance that the field might be one of the

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test plots which had deliberately been allowed to become infected with rust, so that they could determine what it would look like in the infrared. But no, they were all marked clearly, and accounted for. This was a field which last week had been free of rust. Evidently some farmer had become careless in caring for the wheat. Finally he located the field on the photomap, and found that it belonged to Efram Leontus. His intuition had been right again. Whatever else might be said about Efram Leontus, he was as good a farmer as his father. He wasn't likely to become careless in his farming practices. If he had failed to spray a field, it wasn't an accident. It was a deliberate move, and it spelled trouble. And furthermore, Kral had examined these photos before he left that morning to issue the week's ration cards. Why hadn't he mentioned finding Efram Leontus's field to be infected with rust?

As Wilm Kirsten walked back to his desk, he noticed a shadow flicker across the window. He glanced outside, to see Jarel hovering the car while Kral got out. Minutes later, Kral entered the office. He didn't say a word, but seemed to radiate sullen defiance.

"Good morning. How are the farmers doing with the new wheat?"

"Generally pretty good."

"How about old Abram Leontus's boy, Efram? Are his fields doing as well as they should be?"

"Well, no. One of them wasn't sprayed, and it's got rust by now."

"Did he have any excuses?"

"He wouldn't talk to me. I didn't even get to see him. I talked to his oldest son about it. He said that his father had been getting more and more upset about all these 'new-fangled' ideas about how to grow wheat, and he didn't like them."

"Did you give him a ration card anyway?"

For a moment Kral was silent. Then, in a defiant voice, he answered. "Yes, I did. The boy said he'd try to talk his father into getting back to work with the sprayer. And I couldn't see making his family go hungry for a week over one little field." With that, he turned and stalked out of the room.

Wilm Kirsten sat on the edge of the Main Street Landing, and looked across the Clearwater River to the boat landings on the other side. Some boys were seated on the landing directly opposite him, taking advantage of the warm day to do some fishing. They appeared to have had very little luck, but they were keeping busy casting and retrieving their lines. Upstream, the river was empty except for an occasional splash where a fish jumped. Downstream a barge was being poled upriver, undoubtedly from the smithies. Since Kral had organized the distribution of flour, the smithies were again producing and selling metal products. However,

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since the farmers went deeper into debt for each kilogram of flour they bought for use in trade, trade wasn't very brisk yet.

Kirsten shifted his position, and his thoughts returned to Kral Mirok. They hadn't had much to say to each other for the past week, and Kirsten had taken to avoiding the office. There was really nothing much to do there anyway, and he spent his time wandering about Center City, becoming acquainted with the people. The younger man knew he'd been outbluffed by Efram Leontus, even though he wouldn't admit it. And as long as nothing happened to force him to admit it, there would be a wall of silence between him and his supervisor. Perhaps, Kirsten thought, the break will come today, when he comes back from his weekly round of issuing ration cards.

He sighed, tried to put Kral Mirok out of his thoughts, and looked at the sky. It was filled with puffy white clouds which had the appearance of preceding a cumulus buildup. Later in the afternoon, there might be a thunderstorm. In the meantime, it was a pleasant day. High over the far bank of the river, a gull-winged bird was wheeling around in the sky, riding thermals. Kirsten watched the bird for a while, then he noticed a black dot silhouetted against a cloud on the horizon. The dot grew rapidly and became a contra-gravity car. It streaked across the river, jerked to a halt above the City Hall, and plummeted to the street. Kirsten jumped to his feet. Had something happened to Kral? Surely Jarel would never drive like that with Kral in the car. But then he remembered that Kral was driving for himself today, since Jarel had gone back to Makardysville to attend his sister's wedding. Something was really wrong if Kral were driving like that. Kirsten broke into a run toward the office.

He was panting heavily as he ran past the car and bounded up the steps. He found Kral seated at his desk.

"Hah! Let me get my breath. Kral, are you all right? I saw you driving in like Jarel at his worst, and came running. Is something wrong?"

"I'm fine, but there're going to be some hungry people out around Efram Leontus's farm this coming week. I withheld their ration cards."

Kirsten dropped into his chair and breathed deeply for a few minutes. Then, with his voice almost under control, he spoke again. "What has happened? What were they doing?"

"You may remember that Efram Leontus had allowed one of his fields to become infected with rust the week before last. Despite my threat to cut off his ration of flour, I took pity on him and gave him a ration card anyway, especially when his boy told me he'd try to get

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him to take proper care of the new wheat. But when I looked over the area today, not only had Efram Leontus failed to spray any of his fields, all the people in that whole area had stopped farming the way I told them to. All of them. His brothers, his sons, his cousins, and all their children, even his in-laws. Everyone. They'd sprayed with weedkiller, and the fields were bare except for the wheat, and just standing with water. And all the wheat was infected with rust. Six weeks of work gone to waste. So I told them that if they weren't going to give the wheat the right kind of care, they could go hungry for a week. Maybe it would teach them a lesson. They protested quite a bit, about how their children would go hungry and all, and how terribly cruel I was being, but I just let them yell. I'll teach them not to cross me."

"What they did really made you mad, didn't it?"

"You're right. They let me down. I tried to be decent to them, and this is what they did."

Wilm Kirsten slowly stood up, walked across the room, leaned on Kral's desk with both hands, and spoke in measured tones. "Now you listen to me, young man. You've got it exactly backwards. They didn't let you down. You let them down. In many ways, these people are like children. They need to be disciplined. It's your job to provide the discipline, to make them do what they should do, in spite of themselves. And you failed. You failed in your duties.

"Efram Leontus was just testing you, to see what he could get away with, just as a child will test his parents to see how much he can get away with. If you'd withheld his ration card last week, he wouldn't have gone hungry. Every one of his hundreds of relatives would have given him a handful of flour, a handful they'd hardly miss, just as they're taking care of his father, old Abram Leontus. He would have managed well on the sum total. And he'd have started giving his fields proper care again.

"But what happened? You let those people down. You didn't administer discipline when you should have. You tried to be kindhearted and easy-going. So what happened? They tried to get away with more. This time they went too far, and you really had to crack down. This time there will be hundreds of people, including a lot of innocent children, going hungry for a week. They won't starve to death, of course, since they'll have vegetables, leftovers, and so on. But there's going to be a lot of suffering nevertheless, and it all comes from the fact that you weren't firm last week, when you should have been. You had no choice this week. You had to withhold all their ration cards. But if you'd done what you should have done last week, it never would have happened."

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He stood up and continued in a milder tone. "Now about that rust-infected wheat, is it a total loss?"

Mirok, in a chastened voice, replied: "No, sir, it'll clear up if they spray it regularly from now on. The yield will be cut somewhat, but it's not a total loss. A more immediate problem is the water standing in the fields. If it doesn't dry up soon, the wheat will drown. The weeds grow pretty fast here. They should be pretty thick in another couple of weeks, if the people don't use any more weedkiller. After that there shouldn't be any more problem with waterlogged fields."

"Good. You'll have to keep watching them, to see that someone else doesn't probe to see what he can get away with, but this one group has probably learned its lesson. And the first wheat crop should be ready to harvest in another six weeks. Even if the yield isn't all it should be, they'll be back on their feet again." And, he thought to himself, I'd better plan on staying here until that first harvest. There's too much at stake to risk leaving now.

Jarel took the car for a wide sweep around the countryside, before heading for the spaceport. On all sides the fields were green with growing wheat, and the proper proportion of the fields were being harvested. Ahead at the spaceport stood a fat-hulled freighter, towering over Wilm Kirsten's scout cruiser. This one, in contrast to the many which had called in the last few weeks, was taking on a load of flour. The balance between food production and consumption in the colony would be close for several weeks to come, but the first outbound shipload of flour stood as a visible symbol that the colony was past the danger of famine, and would soon be prospering again.

Wilm Kirsten at last broke the silence. "How does the yield of this new wheat compare with the wheat the colonists were growing before?"

"That's a bit hard to tell, since the yield of the old wheat had been falling off, and some of the new wheat was hurt by the rust. But I believe the old wheat, at its best, yielded more than the new wheat ever will. Of course, that's no real problem, since there is still plenty of good land to be claimed. It merely means they'll have to work harder for the same amount of wheat."

"I see. I've been wondering if you couldn't produce a better variety of wheat by crossbreeding the old and new wheat. If you worked at it, you could probably get a strain which produced more, was rust immune, and still grew at the lower temperatures. You'd have to grow the old wheat in a greenhouse in order to let it mature, but you could rig up some large greenhouses of plastic sheeting which ought to work."

"That sounds like a good idea.

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I'll recommend it to my successor."

"Your successor!"

"Yes, sir." Kral pulled an envelope out of an inner pocket. "Here's my resignation."

"But I don't understand. You've certainly turned in a good performance here, and I'm giving you a good write-up in my report. You show real talent at managing the affairs of a colony, and you've earned the respect of the colonists. They know you'll be fair with them, and that you'll tighten the screws on them when they need it."

"That's the trouble, though. I don't think I'm cut out for this kind of job. It takes a real effort on my part to tighten the screws, and the tightening hurts me more than it does the colonists. I just don't like using coercion on people, even to get them to do what I know is good for them."

"But you don't think we'd dare turn this job over to someone who did like coercing people, do you? You're precisely the kind of man we need; one who is sensitive to the suffering of others, yet who has learned that sometimes you have to inflict a little suffering now in order to avoid greater suffering later. If I had found that you enjoyed tightening the screws on the colonists, I'd have bounced you my first week on the planet."

"I'm relieved to hear you say that, sir. This kind of work is what I've wanted to do since I was a kid, and it was quite a blow to think that I wasn't enough of a slave driver to manage it."

"I think you'll manage it. And don't throw away that resignation. It'll make interesting reading for you later. I've saved two or three I never got around to submitting."

"Thanks for the suggestion. Now here's your ship. Do you need any help getting your baggage aboard?"

"No, thanks. Jarel brought most of my things out yesterday, and I've got only one bag with me. Good-bye, now, and the best of luck to you. And to you, too, Jarel."

"Good-bye, sir."

"Good-bye, Mr. Kirsten."

He climbed aboard the ship, sealed the lock behind him, and strapped himself into the pilot's couch. He fed a standard takeoff tape into the autopilot, and made corrections on the console for local gravity and planetary diameter. As the autopilot steered him aloft, he watched the spaceport through the viewscreen until it fell behind the curve of the planet.

"That boy just might make it," he told himself. "He's got what it takes to be a good Planetary Administrator, if he just keeps working at it. A lot of them drop by the wayside, but I don't think he will."

He then began to set up the console for the trip to his next destination. Maybe things would be in good shape there, and he'd be able to complete his inspection in short order. But somehow he didn't think so. ■

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Part II of III. Even with a time machine, getting their Viking Saga on film wasn't so easy. There were troubles like Vikings who weren't in on the game, and weren't playing—they wanted blood. And stars who weren't quite manageable, being seven feet tall and given to homicidal fury . . .

The Time-Machined Saga

HARRY HARRISON

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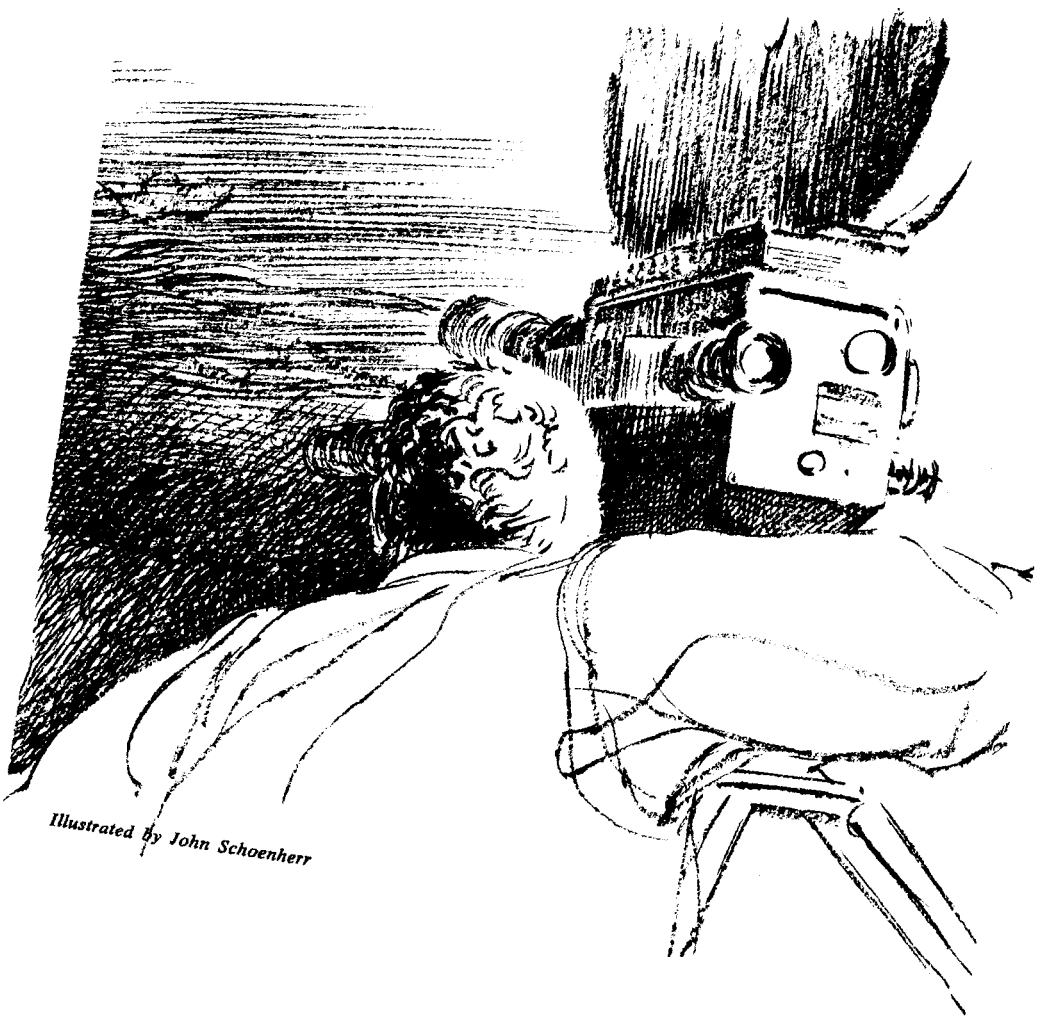

Illustrated By John Schoenherr

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SYNOPSIS

The movie producer, BARNEY HENDRICKSON, has a foolproof plan to save the ailing fortunes of Climactic Studios. He intends to make a wide-screen spectacular film about the discovery of North America by the Vikings—and will cut costs by traveling back in time to film it on the spot as it happens. To do this he uses the vremeatron, a time machine invented by PROFESSOR HEWETT. A preliminary trip is made to the Orkney Islands in 1003 A.D., and they return with OTTAR, ferocious Viking, a lawless and happy product of his time.

OTTAR—for the proper payment—agrees to help them, and he is returned to his own age along with the linguist, DR. JENS LYN, who will teach him English. Production plans are pushed ahead rapidly. CHARLEY CHANG is hired to write a script for the screenplay; RUF HAWK, a dim, but well-muscled, slab of beefcake, is engaged to play the male lead, and SLITHEY TOVE, sex-bomb extraordinary, will play opposite him. BARNEY plows steadily through all the difficulties that get in the way of production, and is forced to strand CHARLEY CHANG on prehistoric Catalina Island where he can write the script. Everything is rushed, since the entire film must be completed within a week, before the banks can write paid to the whole operation. Once BARNEY can get the company moved into the Eleventh Century it can be done—since no time will pass in the present while they are shooting the film.

The caravan of trucks and trailers moves into the past and the filming begins, though interrupted by small problems—and large ones, such as a raid by marauding Vikings. But it still looks as though things will work out well, until RUF, the star of the picture, breaks his leg.

PART 2

IX

There was a crowd around the door of Ruf Hawk's trailer and Barney had to push his way through. "Break it up," he called out. "This is no sideshow. Let me through."

Ruf lay on the bed, his skin grayish and beaded with sweat, still wearing the Viking costume. His right leg was wrapped below the knee with white bandages, now stained red with blood. The nurse stood by the head of the bed, uniformed and efficient.

"How is he?" Barney asked. "Is it serious?"

"About as serious as a broken leg can be," the nurse told him. "Mr. Hawk has suffered a compound fracture of his tibia, that is to say that his lower leg has been broken below the knee and the end of the bone has come through the skin."

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Ruf, with his eyes closed, moaned histrionically at this description.

"That doesn't sound too bad," Barney said desperately. "You can set the bone, then he'll be up and around pretty quickly . . ."

"Mr. Hendrickson," the nurse said in a frigid voice, "I am not a doctor and, therefore, do not give medical treatments to patients. I have administered first aid; I have placed a sterile bandage over the wound to prevent contamination and have given the patient an injection to alleviate the pain. I have done my duty. I would now like to inquire when the doctor will arrive?"

"The doctor, of course, he'll take care of this. Is my secretary here?"

"Yes, Mr. Hendrickson," she said from the doorway.

"Betty—use the pickup outside, Tex will drive you. Find Professor Hewett and tell him to take you back to the studio on the platform, and not to waste one second on the trip. He'll know what I mean. Find the company doctor and bring him here just as fast as you can."

"No doctor, take me back . . . take me back . . ." Ruf said, and groaned again.

"Get going, Betty. Fast." He turned to Ruf, smiling broadly, and patted the actor on the shoulder. "Now don't you worry your head for an instant. No cost will be spared and all the wonders of modern medicine are going to be at your service. They do great things these days, metal pins in the bones, you know. They'll have you walking as good as new . . ."

"No. I don't want to do this picture. This finishes it, I bet it says so in my contract. I want to go home."

"Relax, Ruf. Don't excite yourself, rest. Stay with him, Nurse, I'll get these people out of here. Everything is going to work out fine." But his words were as hollow as his smile, and he snarled as he cleared the wide-eyed spectators from the trailer and the doorway.

Less than five minutes passed before the pickup arrived and the doctor, followed by an orderly with two cases of equipment, came inside.

"I want everyone, but the nurse, out of here," he said.

Barney started to protest, then shrugged. There was nothing more he could do at this moment. He went out and found Professor Hewett tinkering in the guts of his vremeatron.

"Don't disconnect it," Barney said. "I want this time platform operational twenty-four hours a day in case we need it."

"Just securing some of the wiring. I'm afraid a good deal of the circuitry was breadboarded, in the rush you know, and may not be too reliable over an extended period."

"How long did this last trip take? I mean, what time of day is it back there?"

Hewett glanced at the dials. "Give or take a few micro-seconds,

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it is now 1435.52 hours, on Saturday . . ."

"That's after half past two in the afternoon! Where did all the time go?"

"It's not my doing, I assure you. I waited with the platform—and had a rather unsatisfactory lunch from the vending machines—until the truck came back. I understand the doctor was not on the premises and had to be found and the necessary medical equipment obtained before they could return."

Barney rubbed his midriff where the sensation of a cold lump the size of a cannonball was forming. "The completed film is due Monday morning and it is now Saturday afternoon and we've shot about three minutes of usable film and my lead is down with a broken leg. Time, we're running out of time." He looked strangely at the professor. "Time? Why not time? We have all of it we need, don't we? You could find a quiet spot, the kind you brought Charley Chang to, and that would take care of Ruf the same way."

He ran off excitedly before Hewett could answer, making his way through the company encampment and into Ruf's trailer without bothering to knock. Ruf's leg was now in a splint to the hip and the doctor was taking his pulse. The doctor looked sternly at Barney.

"That door was closed for a reason," he said.

"I know, Doctor, and I'll see that no one comes through it. That's a fine looking piece of work, there . . . would you mind my asking how long it is going to be on?"

"Just until I get him to the hospital . . ."

"That's very good, very quick!"

". . . Where I will take the temporary splint off and put on a plaster cast, and *that* will be on for at least twelve weeks, absolute minimum. After that the patient will be at least one month on crutches."

"Well, that doesn't sound bad—in fact it sounds good, very good. I'd like you to take good care of that patient, look after him if you would, and enjoy a bit of a holiday at the same time. We're going to find a nice quiet spot where you can both rest."

"I just don't know what you are talking about, but what you appear to be suggesting is impossible. I have my practice and I could not possibly consider leaving it for twelve weeks—or even twelve hours. I have a very important engagement tonight and I must be going at once. Your secretary assured me that I would be home on time."

"Absolutely," Barney said with calm assurance. He had been over this ground before with Charley and he knew the way. "You'll be on time for your appointment tonight, and you'll be at work on Monday and everything will be fine, in addition to which you are going to have a holiday—all expenses paid—and three months pay to boot. Doesn't

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that sound great? I'll tell you what happens . . ."

"No!" Ruf croaked from the bed, rousing himself enough to shake a fist weakly. "I know what you're trying to do, but the answer is no. I'm through with this picture, and I'm through with the crazy people out there. I saw what happened on the beach and I don't want any part of it."

"Now, Ruf . . ."

"Don't try and talk me around, Barney, you're not changing my mind. I got an out with this leg so I'm washed up with this picture, and even if I didn't have the leg we'd be through. You can't make me act."

Barney opened his mouth—he had a very nice remark that just described Ruf's acting—then with a sudden burst of unaccustomed self-control he clapped it shut again. "We'll talk about it in the morning, you get a good night's sleep," he mumbled between clamped lips, then turned and left before he said any more.

As he stood outside and closed the door of the trailer he closed the door on the picture as well, he knew that. And on his career. Ruf wasn't going to change his mind, that was certain. Few ideas ever penetrated the muscle and bone to that tiny brain, but the few that got in stuck hard. He couldn't force the overmuscled slob to go to a prehistoric island for a rest cure, and if he couldn't—there went the film.

Barney stumbled and looked up, then realized that he had walked through the camp and almost to the shore without being aware of it. He was alone, on a hillock overlooking the beach and the bay. The sun was just above the horizon edging a bank of low-lying clouds with a golden light that reflected on the water, breaking and reforming in molten patterns as the waves rolled in. It had the wild beauty of the world empty of man and he hated it, and everything about it. There was a rock lying by his foot and he picked it up and hurled it, as though the sea were a glass mirror that he hoped to break and destroy. But he hurt his arm when he threw it and the rock fell short and only clattered on the pebbles of the shore.

There wasn't going to be a motion picture. He cursed out loud.

"What's that mean?" Ottar's voice rumbled from behind him. He spun about.

"It means get out of here, you hairy-faced slob!"

Ottar shrugged and held out one big hand in which he clutched two bottles of Jack Daniels. "By my house you looked bad. Have a drink."

Barney opened his mouth to say something scathing, remembered who he was talking to, so instead said "Thanks," and took the opened one. A long, long drink felt good going down.

"I came here for my daily pay,

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one bottle, then Dallas say that from his own silver he buy Ottar one bottle because of fight today. This a big day."

"This a big day, all right. Pass the bottle. It's the last day because this film is over, gone, finished, kaput. You know what that means?"

"No," followed by a long gurgle.

"No, I guess you wouldn't, you untarnished barbaric child of Nature, you. In a funny way I really envy you."

"Not a child of Nature. There was a man called Thord Horsehead, he was my father."

"I really envy you, because you have the world made—your world that is. A strong arm, a good thirst, a good appetite, and never a moment's doubt. Self-doubt, we live on it and I bet you don't even know the meaning of the word."

"Self-doubt? That like sjálfsmord?"*

"Of course you don't know it." The Viking was sitting now and Barney dropped down himself so he could reach the bottle easier. The sun had set and the sky was a deep red at the horizon blending into gray overhead, then darkening behind them.

"We're making a film, Ottar, that's what we're doing, a motion picture. Entertainment and big business rolled into one. Money and art, they don't mix, but we've been mixing them for years. I've been in this business since I wore velvet knee pants and right now, today, at the ripe young age of forty-five I am out of it. Because without this masterpiece Climactic is going to fold, and when they go down the drain I go with them. And do you know why?"

"Have a drink."

"Sure. I'll tell you why. Because in my long and checkered career I have made seventy-three pictures and each and every one of them has been instantly forgettable. If I leave Climactic I am washed up, since there are a lot better directors and producers around who are going to get any jobs that I may want."

Ottar, looking very noble and heroic, the eyes of an eagle, smiled out across the sea and belched. Barney nodded agreement and had another drink.

"You are a wise man, Ottar. I'll tell you something I never told anyone before because I am getting drunk on your daily wage and you probably understand one word in ten that I am saying. Do you know what I am? I am mediocre. Do you have any idea what a terrible admission that is to make? If you're lousy, you soon know it and you get booted out and go to work in a filling station. If you are a genius, you know it and you got it made. But, if you're mediocre, you are never quite sure of it and you blame it on the breaks and keep doing just one more picture until you have

*Suicide

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done seventy-three pieces of cinematic junk and there is not going to be a number seventy-four. The funny part is that number seventy-four could have been a good picture. God knows it certainly would have been different. Down the drain. The picture died unborn, poor picture now in picture limbo. Dead picture, no picture . . ."

"What is this picture?"

"I told you, a work of art. Entertainment. Like your what-do-you-call-them, sagas . . ."

"I'll sing a song from a saga. I sing good."

Ottar stood, took a drink to clear his throat, and sang in a roaring voice that blended with the sound of the waves below.

"Strike, strike, sword,
Thing of my heart where the worm is living!
Faces with anger my sons will bring vengeance.
Death has no fear. The voice of the Valkyrie
Brings new guests to the ale hall of Odin.
Death comes. The table holds a banquet.
Life is done now. Laughing I die!"

Ottar stood for a moment—then roared even louder with anger. "That was Ragnar's song when King Aella murdered him and Aella died. I wish I could have slain him." He shook his fist at the unsympathetic sky.

Barney was having trouble with his vision, but he found that if he closed one eye he could see well enough. Ottar loomed over him, a figure from the dawn of the world with his leather garments and flowing hair, the last light of sunset picking out red highlights on his skin. The saga was real to him, and life and art were one. The song was the battle and the battle became the song.

The idea hit Barney with startling suddenness and he gasped.

Well why not? If he hadn't been half potted, drinking on the shore of this ancient sea with a man who should have been dead for a thousand years, it would never have occurred to him. Well why not? Everything else about this business was madness, why not the final touch of insanity? He had the freedom and the power—and he was washed up in any case. Why not?

"Come with me," he said, climbing to his feet and attempting to pull the immobile form of the Viking after him.

"Why?" Ottar asked.

"To see pictures." Ottar was unimpressed. "To get more whiskey."

This was a lot better reason and they went back to camp together, Barney leaning a good deal on the other man who seemed scarcely aware of it.

"The rushes ready?" Barney asked, poking his head into the studio trailer.

"Coming out of the drier now,

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Mr. Hendrickson," the technician said.

"Right. Set the screen up outside and let's see them. Show the other takes first, then put today's on."

"Whiskey?" Ottar asked and Barney said, "Sure, sit right down here and I'll get it."

There was a certain amount of difficulty in finding the right trailer in the dark, as well as an unusually large number of items underfoot to stumble over; then the problem finding the right key for the lock. By the time Barney made his way back with the bottle a folding screen had been set up, as well as some safari chairs. He and Ottar settled themselves comfortably, with the bottle between them, the projector whirred and they watched the film in the wonderfully appropriate theater of open sky and stars.

At first Ottar had trouble seeing the projected films as a picture, his untrained eye not connecting the moving patterns with reality. But he was not unacquainted with representational art, both three dimensional in wood carving as well as two-dimensional paintings, and when he recognized the beach and his house he shouted with wonder.

Dinner was almost through and most of the company wandered over to look at the rushes. Even the ones who had not been present had heard all about the Viking raid by this time, and there were murmurs and gasps when the attacking ship appeared on the screen, cut through by Ottar's deep growl of rage. As the ship was beached and the fighting began there was only a horrified silence. The angle was good, the pictures sharp and clear, the detail almost unbearable to watch. Even Barney, who had been there at the time, felt the hackles rising on his neck when the blood-spattered Viking charged up the hill right into the camera, closer and closer.

Shouting a battle cry, Ottar leaped at the screen and crashed through it, rolling about in it and tearing at its fabric and metal embrace. Everyone else was shouting a good deal too, and one of the grips brought out a baby spot and plugged it in for light while Lyn managed to calm the Viking down and helping hands detached him from the ruined screen. While this was going on headlights appeared, moving through the camp, and a minute later a white ambulance with LOS ANGELES COUNTY HOSPITAL on its side pulled up in the pool of light from the spot.

"What a job finding anyone," the driver said. "You movie people sure have some big sets, I never woulda thought all this could have fitted into one sound stage."

Barney said, "What do you want?"

"Got a call. Pick up a broken leg case, party name of Hawk."

Barney looked around the silent audience until he saw his secretary. "Show these people the way to

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Ruf's trailer, will you Betty? And give him my best, tell him I hope he gets well quick, that kind of thing."

Betty tried to say something, but could not find the words. She turned away quickly, raising her handkerchief to her face, and climbed into the ambulance. The silence extended and a number of people were having trouble meeting Barney's eye. He smiled a broad, secret smile to himself, and waved his hand cheerfully.

"On with the show," he ordered. "Get another screen up and let's see the rest of the rushes."

When the last foot of film had flicked through the projector, Barney stood in front of the screen in the glare of light, shielding his eyes against it with one hand. "I can't see who's out there . . . Gino are you here? And Amory?" There were sounds of assent from the crowd. "Good, let's set up for a screen test. Get some grips and some lights out here—"

"It's nighttime, Mr. Hendrickson," a voice said from the darkness.

"I'm not that blind—and I get the message. Overtime rates then, but I want to shoot that test now. As you probably all know, since rumor doth flyeth on pretty damn rapid wings around here, Ruf Hawk has broken his leg and is out of the shooting. Which leaves us without a male lead. Which may sound bad, but it isn't, because we don't have that much film with him in it that we'll have to scrap. But we need a new lead and that's what we're settling tonight, so I'm going to make a test on a guy you all know well, our local friend, Ottar . . ."

There were some shocked gasps, a lot of whispers, and a couple of laughs. The laughs were what got to Barney.

"I issue the orders, and I'm in charge here, and I want a screen test and that is that!" He stopped to catch his breath and realized that he was in charge, more in charge than he had ever been before. A thousand years away from the front office, with no phone connections in between. No L.M. to bother him, even if L.M. hadn't been shut away with his phony heart attack, with the books under his mattress. The whole load was on his shoulders, and his alone, and the picture depended on what he did next. More than the picture, the existence of the studio depended on it and the jobs of everyone here—not to mention his own.

Normally this was the sort of situation that gave him peptic twinges and sleepless nights, and left him wandering in a black hell of indecision. Not this time though. Something of the Viking spirit must have rubbed off, the awareness that every man is alone against the world and in luck if there is someone else there to help, but the help was not to be expected.

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"We're doing that test now. Ottar looks the part, no one can argue with that. And if he has got a bit of an accent—well so did Boyer and von Stroheim, and look what they did. Now let's see if he can act, at least as well as Ruf."

"Five bucks says he's better," someone called out.

"No takers," another voice answered, and a ripple of laughter ran across the crowd.

Just like that they were with him, Barney could feel it. Perhaps the Viking madness was rubbing off on all of them. Whatever was causing it, they were on his side.

Barney slumped back in the chair and gave a few directions and sipped at the Jack Daniels while the lights and cameras were set up. Only when the arrangements were completed did he stand and pull the bottle away from the nodding Ottar.

"Give it back," Ottar rumbled.

"In a minute. But I want you to sing me that saga about Ragnar again."

"Don't want to sing."

"Sure you do, Ottar. I've been telling everyone how great the song was and they all want to hear you sing, don't you people?"

There was a welcoming chorus of *yeses* and some cheers. Slithey swam out of the darkness and took Ottar's hand. "You'll play it for me, darling, it will be my song," she said, reciting a line from her last picture which had been about some second-rate composer.

Ottar could not resist the personal touch. Still grumbling, but not meaning it, he stood where Barney told him to, and took the prop ax.

"Too light," he said. "Made of wood. No good at all."

He sang for them then, first in a chanting monotone, still examining the ax, then louder and with more enthusiasm as the song began to stir his emotions. With an angry shout he finished the last line and swung the ax fiercely, knocking over and almost demolishing one of the spots. The audience broke into impulsive clapping and cheers, while he strode back and forth before them accepting his due.

"That was great," Barney said. "Now we'll try just one more little business before we let you go. You see that lamp stand over there with the coat and helmet hung on it? Well that's an enemy sentry. You're going to stalk and kill him, just as you really would."

"Why?"

"Why? Ottar, what kind of question is that?" Barney knew what kind of a question it was—the kind that is very hard to answer. The *why* for an actor was easy enough, because acting was how he earned his bread. But why should Ottar do it?

"Forget that for a minute," Barney said. "Come over here and sit down a minute, have a drink, and I'll tell you a saga for a change."

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"You have a saga, too? Sagas are good."

In this pre-entertainment, pre-literacy age the sagas were song and history, newspaper and book all rolled into one, and Barney knew it.

"That's fine," he said, and waved the camera on Ottar. "Just grab the bottle and listen to this story, the story of a great Viking, a great berserker and he was called Ottar . . ."

"Same name as me?"

". . . The same, and he was a famous warrior. He had a good friend whom he drank with and who fought beside him and they were the best friends in the world. But one day there was a battle and Ottar's friend was captured and tied up and taken away. But Ottar followed and he waited, hidden near the enemy camp, until nightfall. He was thirsty after the battle and he drank, but he stayed quiet and hidden."

Ottar took a quick sip from the bottle as he said this, then pressed his back against the trailer.

"Then it was dark and the time had come. He would free his friend. Stand, Ottar, he said to himself, stand and go save your friend who they will kill by morning. Stand!"

Barney hissed the last word, commandingly, and in a single lithe movement Ottar was on his feet, the bottle fallen and forgotten.

"Look, Ottar, look around this building and see the guard. Carefully—there he is!"

Ottar was part of the story now. He bent low and moved slowly around the corner—then back.

"There is the guard, his back is turned. Creep up on him, Ottar, and slay him silently with your hands. Close them around his neck so that he dies without a sound. Quietly now, while his back is turned."

Ottar was out from behind the trailer, bent double and drifting as soundlessly as a shadow over the rutted ground. No one moved or uttered a word as he advanced. Barney glanced around and saw his secretary next to him, eyes fixed on the stalking Viking.

"Halfway to the guard, Ottar heard a sound. Someone was coming. He hid." Ottar vanished into a patch of darkness and Barney whispered. "Get out there, Betty. Just walk on an exit stage left." He took her arm and started her forward.

"Ottar hid, shrouded by the darkness as one of the women came by. She walked close, but she did not see him. She went on. Ottar waited until it was quiet, then came forward again, closer and closer—until he could leap!"

Gino had to pan the camera rapidly as the Viking moved out and sprang, running—still in absolute silence—and hurled himself through the air onto the dummy. The helmet rolled aside and he had the steel rod of the lamp support between his fingers, bending it almost double in a single contraction of his muscles.

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"Cut!" Barney said. "That was the story, Ottar, just the way you would have done it. Killed the guard and freed your friend. Very good, real good. Everyone now, let him know how much you liked that performance."

While they cheered and whistled Ottar sat up, blinking rapidly, slow memory returning as to where he was. He looked at the twisted metal, then threw it aside, grinning.

"That was a good story," he said. "That was the way Ottar does it."

"I'll show you the rushes tomorrow," Barney said. "Let you see the moving pictures of yourself doing all these things. Meanwhile—it's been a long day. Tex . . . Dallas —will one of you take the jeep and drive Ottar home?"

The night air was getting cool and the crowd broke up quickly, while the grips put the spots and camera away. Barney watched the taillight of the jeep vanish over the rise, then realized that Gino was next to him, lighting a cigarette. He took one from the pack.

"What do you think?" he asked.

"I don't think," Gino shrugged. "What do I know? I'm a cameraman . . ."

"Every cameraman I ever met knows, deep inside, that he is a better director than any bum he ever worked with. What do you think?"

"Well—if you was to ask me, which you have, I would say that this guy is at least better than that slab of corn beef they carried away, and if the test looks like I think it will look—then maybe you have discovered the find of the century. The Eleventh Century, of course. Talk about method acting!"

Barney flipped the cigarette away into the darkness. "That," he said, "was just what I was thinking myself."

X

Barney had to raise his voice to be heard over the drumming roar of the rain on the trailer roof.

"Are you sure he knew what he was signing?" he asked, staring dubiously at the shaky X and thumbprint on the bottom of the contract.

"Absolutely," Jens Lyn said. "I read him both the English original and the Old Norse translation and he agreed with everything, then signed in front of witnesses."

"I hope he never gets hold of a good lawyer. According to this he —the male lead—is making less than anyone else in the company, including the guy who takes care of the john-on-wheels."

"There can be no possible complaint, the terms of salary were his suggestion. One bottle of Jack Daniels a day, and a silver mark every month."

"But that's hardly enough silver to fill a tooth."

"We must not forget the relative economic position of the two different worlds," Jens said in his best classroom manner, admonitory fin-

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ger raised. "The economy here is essentially one of barter and trade, with very little payment by coin. The silver mark, therefore, has a much greater value, which is very hard to compare to our price for mass produced silver. It is perhaps better to look at its buying power. For a silver mark you can buy a slave. For two marks . . ."

"I get the point, enough already. What is more important, is will he stick around to finish the picture?"

Jens shrugged.

"Oh, that's a very good answer." Barney rubbed his thumb against the aching spot in his temple and looked out of the window at the leaden skies and the falling curtains of rain. "It's been raining like that for two days now—doesn't it ever stop?"

"It is to be expected. You must not forget that, although the weather here in the Tenth Century is warmer than the Twentieth because of the Little Climatic Optimum, we are still in the North Atlantic at approximately 59 degrees north latitude, and the rainfall is . . ."

"Save the lecture. I have to be sure that Ottar will cooperate for the entire film—or I don't dare begin shooting. He may sail away in that new ship of his, or do whatever Vikings do. In fact—what does he do here? He's not exactly my idea of a jolly farmer."

"He is in exile for the moment. It appears he did not relish conversion to Christianity as King Olaf Tryggvesson practices it, so after a losing battle he had to flee from Norway."

"What does he have against becoming a Christian?"

"Olaf would submit him first to the ordeal of the snake. In this the mouthpiece of a *lurhorn,* the large brass war-horn, is forced well down the throat of the victim, a poisonous snake is put in the bell of the horn which is then sealed, and the horn heated until the snake seeks escape down the pagan's throat."

"Very attractive. So what happened when he left Norway?"

"He was on his way to Iceland, but his ship was wrecked in a storm and he and a few of his crewmen made it ashore here. All this happened not too long before our arrival the first time."

"If he was shipwrecked—whose house is that he's living in?"

"I am sure I do not know. He and his men killed the former owner and took over."

"What a way to live—but it's good news as far as we're concerned. He's sure to stick around as long as he is well paid and drunk."

Amory Blestead came in with a gust of wind and a splatter of rain, then had to lean against the door to close it again.

"Hang your things on the back of the door to drip," Barney said. "There's some coffee on the hotplate. How's the sēt coming?"

"Just about finished," Amory

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said, stirring sugar into his cup. "We knocked out the back wall of the house to get the cameras and lights in, covered it with plywood panels, raised the ceiling four feet. This was a lot easier than I thought, we just jacked up the beams and lifted the whole lot straight up, then the local labor cut sods and shoved them in to build the walls higher. These guys really know how to work."

"And cheap, too," Barney said. "So far the budget is the only thing that has gone right with this picture." He flipped through his copy of the script, marking off scenes with a red pencil. "Can we shoot some interiors now?"

"Any time you say."

"Let's go then, into the rubber boots. What did you think of the screen test, Amory?"

"Absolutely first class. This Viking is a natural, a real find."

"Yeah," Barney said, chewing on the pencil, then flinging it down. "Let's hope so. He might be able to do a scene or two—but how will he hold up during an entire production? I wanted to shoot some simple stuff on location first, climbing in and out of boats and looking heroically into the sunset, but the weather has killed that. It's going to have to be interiors—and keep your fingers crossed."

Rain blew in around the side curtains of the jeep as they churned slowly over the hill along the mud track worn by the traffic from the camp. Quite a few vehicles were parked in the field behind Ottar's house, dominated by the thudding bulk of the generator trailer. They pulled in as close to the house as they could, then sloshed up the path. In the lee of the building were hunched most of the housecarls, dripping and unhappy, thrown out into the weather to make room for the film production. The plywood door was blocked partially open to admit the thick electric cables and Barney pushed his way in.

"Let's get some light in here," he said, shaking out of his sodden coat. "And clear that crowd away from the end of the room, I want to see this shut-bed thing."

"Watch out for the stain, it's still a little wet on the antiqued wood," Amory said, pointing to the double doors set into the wall.

"Not bad," Barney said.

Jens Lyn snorted. "Not good! I explained that in a simple house, such as this one, the occupants would sleep on the sleeping ledge along the wall, that ledge over there, but they might *possibly* have a shut-bed, a small doored chamber built into the wall. Small to retain the body heat, that is the purpose of the shut-bed." He swung open the five foot high doors to disclose a small room floored with a foam mattress and nylon sheets. "But this is an abomination! Nothing about it . . ."

"Take it easy, Doc," Barney said, looking at the shut-bed through a

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viewer. "We're shooting a picture, remember? You're not going to get a camera and a couple of people inside the kind of coffin you're thinking about. All right, drop the back."

Two carpenters took away the back wall of the cubicle to disclose a camera in a shed on the other side.

"Get in there, Gino," Barney ordered, "and *I'll* run through the action. This is take fifty-four. Just in time, Ottar, you're about to go on stage."

The Viking stamped in, swathed in plastic raincoats and followed by the clucking makeup man who held an umbrella over his head.

"Hello, Barney," he shouted. "I look good, not?"

He did look good. He had been soaked in a tub—the water had to be changed three times—his hair and beard had been washed, color-rinsed, dried, trimmed and combed, and Ruf's Viking outfit let out and recut for his massive frame. He was impressive, and he knew it and reveled in it.

"You're tremendous," Barney said. "So great that I want to take some more pictures of you, you'll like looking at them, won't you?"

"Good idea. I look good in pictures."

"Right. Now here's what I want you to do." Barney closed the shut-bed doors. "I'll be inside with the camera. You stand here and open the doors . . . like this . . . and when they are wide open you look down at the bed like this and smile slowly. That's all you have to do."

"That sounds like stupid idea. Better take a picture of me out here."

"I appreciate the suggestion, Ottar, but I think we'll do it my way. After all you are getting a bottle a day and a mark a month and you should do something to earn it."

"That's right—every day. Where's today's bottle?"

"When you're *through* working, and we haven't started yet. So stand right here and I'll get around with the camera." He threw a raincoat over his head and sloshed out to the shed.

After many shouted instructions and false starts, Ottar seemed to understand what was expected of him and the doors were closed once more and Barney called for the camera and action. The camera pointed into the dark bedspace and whirred as the doors were flung open with great force. One of the handles came off in Ottar's hand and he threw it down.

"Hell-damn," he snarled.

Barney took a deep breath. "That's not exactly the way the scene should be played," he said. "You have to put yourself into the part, Ottar. You've come home unexpectedly, you are tired. You open the doors to retire, then you look down and see Gudrid lying there asleep and you smile at her."

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"Nobody named Gudrid on this island."

"Gudrid is Slithey's name in this screenplay. You know who Slithey is?"

"Sure—but she's not here now. This is pretty stupid I say, Barney."

Barney had been directing indifferent and bad actors for years, so he took this objection in his stride. "Just wait one minute and we'll try it again," he said.

There was a lot of rustling and grumbled complaints from the other side, but finally the doors swung open again, slower this time, and Ottar looked in. He was scowling fiercely into the camera, then he glanced down at the bed and his expression slowly changed. The wrinkled brow smoothed, the corners of his mouth rose into a happy smile and his eyes opened wide. He reached in.

"Cut. That was very good," Barney said, moving faster than Ottar and grabbing up the bottle of Jack Daniels from the bed. "I'll save this for you for later. Ow!"

The Viking had him by the wrist, which created a sensation not unlike being caught between the jaws of a hydraulic press, and the bottle fell from his limp fingers. Barney went back into the house rubbing his crushed wrist and wondering if, after all, he hadn't made a mistake in casting.

Slithey had arrived and, when the rubber boots, coats and yards of plastic had been removed, she stood and shivered in bare feet and a diaphanous pink nightgown. She wore a flesh-colored body stocking, the garment was low cut and transparent, and the entire effect was devastating.

"Very authentic costuming, very," Jens Lyn said cuttingly, and left. Ottar sucked happily at the bottle and ignored everyone.

"I'm cold," Slithey said.

"Rig an electric heater with those lights over the bed," Barney ordered. "Take forty-three, Slithey, just climb into the sack and close the doors. It's warm enough in there."

"I don't want to catch pea-newmonia."

"With your insulation, honey, not a chance."

It was a brief scene, just a few seconds on the screen, but everything takes time when making a film and before they were finished Ottar had worked halfway down the bottle and was singing happily to himself in one corner.

"Here we go, take fifty-five, you're on, Ottar, if you wouldn't mind putting your salary down for a while," Barney called out.

Much pacified by the whiskey, Ottar tramped over and looked at Slithey sprawled daintily in the oversized bed, covered by a viking-navajo blanket.

"She tired?" Ottar asked. "Too many lights to sleep."

"Very keen of you to notice, but we're still making the film. Here's

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what I want you to do." Barney stood by the side of the bed."You have just opened the doors, you look down at the girl asleep. Then, slowly, you reach your hand down and touch her hair. She awakes and does a fright take, shrinking away. You laugh and sit on the edge of the bed, you pull her towards you and kiss her. At first she struggles, pushes you away, but then hate turns to love and her arms steal around you and she kisses you, too. Your hand slowly goes to her shoulder strap, make sure it's this one—the other one is glued on—and you slowly slide it over her shoulder. That's all. We cut there and the rest is left to the public's imagination and they have good imaginations. So let's run through it once first."

It was desperately hard work, since Ottar wasn't interested in the least and kept looking towards the bottle to make sure no one was touching it, and Barney was sweating as he fought to put the Viking through his wooden paces. The bottle was finally placed in the corner of the bed out of camera range, which at least kept Ottar looking in the right direction most of the time.

Barney took a long drink of chemical-tasting water and one more time stood Ottar on the lines scratched into the dirt floor.

"Here we go," he said. "We'll shoot this without sound and I'll guide you through it. And everyone else shut up, this set sounds like a Mah-Jongg party. Camera. Here you go, Ottar, you look down, that's it—not at the damn bottle—you reach out and touch her hair. Slithey wakes up, great, you're doing fine, sit down now—don't break the bed! O.K., now you reach out and we have the kiss."

Ottar's fingers closed around the bare flesh of Slithey's arm and his back straightened suddenly and he completely forgot about his bottle. Slithey's hormone-magic worked just as well in the Eleventh Century as it had in the Twentieth. The odor of scented female flesh rose into his nostrils and he did not need Barney's instructions to pull her close.

"Very good," Barney called out. "A passionate embrace and a kiss, but you don't like it, Slithey."

Slithey was squirming in his grip and beating his massive chest with her clenched fists. She turned her head away and said, "Easy, caveman, take it easy," then he was kissing her again.

"Great!" Barney shouted. "That's perfect, Slithey. Ottar, now the shoulder strap."

There was the sharp sound of torn fabric.

"Hey—watch what you're doing!" Slithey called out.

"Forget it," Barney said. "We can run up a new nighty. This is great. Now you change, Slithey. Hate turns to burning love. Very good . . ."

"Look what he's doing!" Amory Blestead said.

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"Cut. That's good. We'll print that. I said cut . . . Ottar . . . Slithey—the scene is over!"

"Wow!" one of the grips said enthusiastically.

"Someone stop them!"

"Why—they seem to be enjoying it—and so am I."

"That's enough," Barney said sharply. "Ottar!"

"Yippee!" someone said, and after that there was just a long silence broken only by Ottar's steam-engine breathing.

Barney finally broke the spell of fascinated attention by walking over and slamming shut the doors. From the other side came a high-pitched, happy shriek. He turned and saw Gino bent over the camera. "What are you doing?" he shouted. "Cut!"

"Cut, sure," Gino said, straightening up slowly from behind the camera.

"Didn't you hear me say *cut* last time!"

"Cut? No, I must have been distracted."

"Do you mean . . . the camera was running all the time?"

"All the time," Gino said with a very wide smile. "I think you've got something really new here in *cinema verité*, Mr. Hendrickson."

Barney looked at the closed doors and fumbled out a cigarette. "You might say that. Though I don't know if we'll be able to show the uncut version anywhere out of Scandinavia."

"Dr. Masters could use it."

"I know a guy in Beverly Hills who rents out stag movies, he'd buy a print," Amory said.

There was a moment of silence as happy laughter echoed through the closed doors.

"And he's even got a bottle of whiskey in there," one of the carpenters said dismally.

XI

"One thing I really like about the Eleventh Century," Barney said, spearing a large chunk of white meat with his fork, "is the sea food. What's the reason for that, professor? Lack of pollution, or what?"

"It is probably because what you are eating is not sea food from the Eleventh Century."

"Don't try to sell me that. This isn't any of that frozen TV dinner stuff we brought along. Look, the clouds are breaking up, if it stays like this we can shoot the rest of the homecoming today."

The front of the mess tent was rolled up, which gave a clear view across the fields with a bit of ocean visible beyond. Professor Hewett pointed to it.

"The fish in the ocean here are identical with those of the Twentieth Century, to all practical purposes. But the trilobite on your plate is of a totally different order and era, brought back by the weekend parties from Old Catalina."

"That's what all the dripping

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boxes were about." He looked suspiciously at the meat on his plate. "Just a minute—this thing I'm eating—it has nothing to do with Charley Chang's eyes and teeth, does it?"

"No," the professor said, "you must remember we changed periods when it was decided that members of the company should spend two days a week in a different time, so that work here would be continuous. Santa Catalina is a perfect holiday spot, Mr. Chang verified that, but he was slightly put out by the local life. That was my mistake, I left him in the Devonian period when amphibian life was beginning to emerge from the sea, totally harmless creatures such as the lungfish for the most part. But there were things in the water . . ."

"Eyes and teeth. We heard."

". . . So I considered the Cambrian a wiser choice for our weekenders. Nothing in the ocean to bother the bathers that is larger than the harmless trilobite."

"So you've used the word again. What is it?"

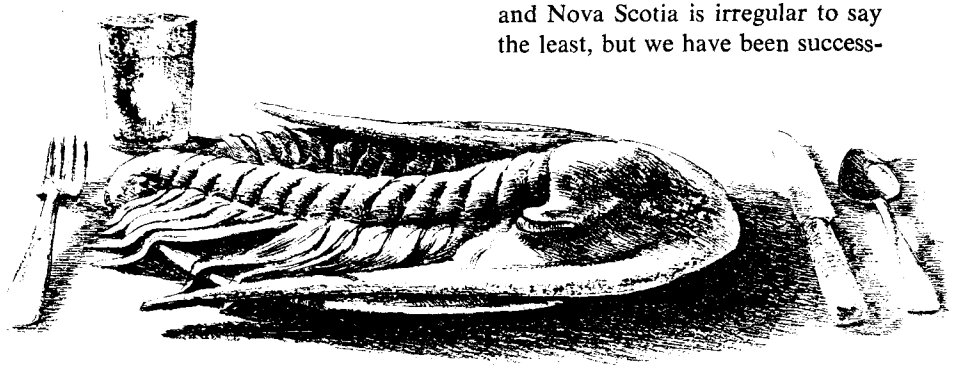
"An extinct arthropod. A form of life generally classed somewhere between the crustaceans and the arachnidans, some specimens of which are quite small, but the one you're eating is the largest. A sort of two-foot long, seagoing woodlouse."

Barney dropped his fork and took a long swallow of coffee. "That was a delicious lunch," he said. "Now if you don't mind, could we talk about the colony in Vinland? Have you found it yet?"

"My news isn't too good."

"After the trilobite anything is good. Tell me."

"You must understand that my detailed knowledge of the period is limited. But Dr. Lyn is well versed on the history and he has all the records in the original sagas about the Vinland discoveries and settlements, and I have been following his instructions. It was difficult at times to find a suitable arrival location, the coast of Newfoundland and Nova Scotia is irregular to say the least, but we have been success-



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ful at this. The motorboat has been used extensively, so that I can assure you that the search has been carried out as thoroughly as was possible."

"What have you found?"

"Nothing."

"That's the sort of news I like to hear," Barney said, pushing his plate of french fried trilobite further away. "Get the Doc over here, if you don't mind. I want to hear more about this."

"It is true," Jens Lyn said in his gloomiest, north Baltic manner. "There are no Norse settlements in North America. It is most disturbing. We have searched all the possible sites from the Tenth to the Thirteenth Century and have found nothing."

"What made you think that there was anything to find?"

Lyn's nostrils flared. "May I remind you that, since the discovery of the Vinland Map, there has been little doubt that the Norse did explore and settle in North America. It is recorded that in 1121 Bishop Eirik Gnuppsson went on a mission to Vinland. The sagas describe the many journeys there and the settlements that were made. Only the exact location of the settlements is still in doubt, and discovering the location was the purpose of our recent explorations. In theory we had thousands of miles of coast to explore, since the authorities differ widely as to the location of Helluland and Markland mentioned in the sagas. Gathorne-Hardy identifies the Straumsfjord as Long Island Sound, and places Hop in the estuary of the Hudson River. But other authorities think the landings took place farther north, Storm and Babcock think favorably of Labrador and Newfoundland, and Mowat has actually pinpointed the location of Hop . . ."

"Stop," Barney said. "I do not care about the theories. Did you, or did you not, just get through telling me that you had found no settlements or evidence of any kind?"

"I did, but . . ."

"Then all of the authorities are completely wrong?"

"Well . . . yes," Lyn said, sitting down and looking very unhappy.

"Don't let it bother you, Doc," Barney said, holding his cup out so the waitress could pour more coffee into it. "You can write a book about it, then you'll be the new authority. What is more important is—where do we go from here? May I remind those of you who have not read the script lately, that it is titled 'Viking Columbus' and is the saga of the discovery of North America and the founding of the first settlement there. So what do we do? We had planned to move the company over to the Viking settlements and shoot the last part of the picture there. But no settlements. What comes next?"

Jens Lyn chewed his knuckle a

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moment, then looked up. "We could go to the West coast of Norway. There are Norse settlements there, and it looks not unlike the Newfoundland coast at places."

"Do they have many Indians we can hire for the big battle scenes?" Barney asked.

"None at all."

"Then that's out. Maybe we better ask our local man." He looked around the tent and spotted Ottar working his way through a steaming heap of trilobites in the far corner. "Go over and disturb his lunch, Jens, tell him he can have seconds and thirds later."

"You want Ottar?" the Viking asked, stamping over and dropping onto the bench.

"What do you know about Vinland?" Barney said to him.

"Nothing."

"You mean you've never heard of it?"

"Sure I heard the *skald* make poems about it, and I talked to Leifr Eiriksson about his trip. I've never seen it, don't know anything. One year I go to Iceland then go to Vinland, get very rich."

"With what? Gold? Silver?"

"Wood," Ottar said, with contempt for anyone who did not know such an obvious thing.

"For the Greenland settlements," Jens Lyn explained. "They are always terribly short of wood of any kind, and in particular the hardwoods needed for shipbuilding. A load of hardwood delivered in Greenland would be worth a fortune."

"Well, there's your answer," Barney said, rising. "As soon as we finish shooting here we pay off Ottar and he sails to Vinland. We jump ahead in time and meet him. We film the departure, some ocean shots to do for the trip, then his arrival. They throw up a few shacks for a settlement, we pay some wampum to the local tribe to burn them down and the picture is finished."

"Good idea. Plenty wood in Vinland," Ottar said.

Jens Lyn started to protest, then shrugged. "Who am I to complain. If he is fool enough to do it, to enable you to make a picture—who am I to quibble. There is no known saga about a visit of someone named Ottar to Vinland, but since there seems to be no evidence to the veracity of the other sagas I do not think I can complain."

"Finish lunch now," Ottar said.

Barney went out and found his secretary waiting for him with an armful of folders.

"I didn't want to bother you while you were eating," she said.

"Why not? After what I just ate my digestion will never be the same again. Do you know what trilobites are?"

"Sure. Big squiggly things that we net on Old Catalina. It's a lot of fun, you catch them at night with a flashlight then have a barbecue with beer. You should . . ."

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"No I shouldn't. What did you want to see me about?"

"It's the time cards and the records, the weekends in particular. You see everyone here has been taking their weekend time, what would be their Saturdays and their Sundays, on Old Catalina—every one except you, that is. You haven't had a day off in the five weeks we've been here."

"Don't suffer for me, Betty darling. I'm not going to relax until this picture is in the can. What's the problem?"

"Some of the skin divers would like to stay more than two days at a time, they have asked for four and said they will give up next weekend and work right through. My records are loused up as it is and this will wreck merry hell with them. What can I do?"

"Walk with me over to Ottar's house, I can use the exercise. We'll go along the beach." Barney thought in silence for a minute as they came down to the shore. "Here's what. Forget all the days of the week jazz and work it by number alone. Anyone who works five days in a row gets the following two off. If they want four days together, then they have to work ten days straight, with days eleven through fourteen off. Their day records will be in your books and on the time cards, since they're punching in here and in Catalina both. Since two days or four days away means only a five minute ride on the time platform, everyone is here all the time and working every day as far as I'm concerned—and that is all that counts. You do your record keeping like that, and I'll straighten it out with L.M. and the payroll department when we get back."

They were almost to the headland that bounded the cove near Ottar's house, when the jeep bounced down the track to the beach behind them, its horn blowing steadily.

"Now what?" Barney asked. "Trouble, it has to be trouble. No one ever rushes up to give me good news." He stood, looking unhappy, while they waited for the jeep to arrive. Dallas was driving, and he braked to a stop without kicking too many rocks around.

"Some kind of ship coming into the bay," Dallas said. "They passed on the word and everyone is looking for you."

"Well you found me. What is it, more Viking raiders like the last time?"

"All I know I told," Dallas said, complacently chewing on a wooden matchstick.

"I was right about the trouble," Barney said, climbing into the jeep. "You get back to the camp, Betty, in case there is any roughhouse."

They saw the ship as soon as they came around the headland, a large vessel with a broad sail, coming in briskly before the following wind.

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The film company people were on the hill behind the house, staying together, but all of the locals had run down to the beach where they were waving their arms and shouting.

"More murder," Barney said. "And there's my *paparazzo* cameraman on the spot ready to capture all the gore in technicolor. Get down there and let's see if we can stop it this time."

Gino had set his camera up on the beach where he could shoot both the welcoming committee and the arriving ship. That things were better than Barney had thought was obvious when they got closer, because all the northmen were laughing and waving, and their hands were empty of weapons. Ottar, who must have rushed there as soon as he had heard of the arrival, was knee-deep in the water, shouting loudly. As the ship neared the shore the big sail was lowered, but the vessel had enough way to beach itself, scraping up the gravel and shuddering to a halt. A tall man with an immense red beard who had been at the steering oar, ran forward and leaped into the surf near Ottar. They shouted greetings and embraced each other strongly.

"Zoom in on the bear-hugging," Barney called out to Gino. "And I won't have to get a release or pay a cent to any of them," he muttered happily to himself as he watched the busy scene.

The film people were drifting down to the shore now that it was obvious there would be no violence. Kegs of ale were being rolled out by the housecarls. Barney walked over and joined Jens Lyn who was watching Ottar and the newcomer smite each other on the biceps with shouts of glee.

"What's it all about?" Barney asked.

"They are old friends and they are telling one another how glad they are to meet again."

"That's obvious enough. Who's redbeard?"

"Ottar called him Thorhall, so it may be Thorhall Gamlisson from Iceland. He and Ottar used to go viking together and Ottar always talked about him in a very friendly manner."

"What's all the shouting about now?"

"Thorhall is saying how glad he is that Ottar wanted to buy his ship because he, Thorhall, is looking forward to going back to Norway and he can use Ottar's longship for that. He's asking now for the other half of the money."

Ottar spat out a single, loud, sharp-edged word.

"I know that one," Barney said. "We've been here long enough to pick up at least that much of the language."

The shouting was louder and was beginning to get a nasty tone to it. "Ottar is suggesting that Thorhall has evil illar vaettir,* in his head

*Evil spirits

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because he never bought any ship. Thorhall says that Ottar was singing in a different manner three months ago when he came and accepted hospitality and bought the ship. Ottar is sure now that Thorhall is possessed because he hasn't been off this island for over a year, and he suggests that a hole be made in Thorhall's head to let some of the bad spirits out. Thorhall now suggests that as soon as he gets his ax he'll show which head will be opened . . ."

Something clicked in Barney's mind and he roused himself from the spectator attitude that had possessed him while he watched the two heavyweights square off and prepare for a murderous slugging match.

"Stop!" he shouted, but they ignored him completely. He tried again in Old Norse, "Nemit stadar!"* with the same result. "Fire a couple of shots into the air," he called over to Dallas. "Break this thing up before it gets started."

Tex fired at the gravel so that the mashed bullets ricocheted screaming out over the water. The two Vikings turned, their personal differences forgotten for the moment. Barney hurried over.

"Ottar, listen to me, I think I know what this is all about."

"I know what's it about," Ottar rumbled, clenching his fists. "Nobody calls Ottar a . . ."

*"Stop!" (you, plural)

"It's not as bad as it sounds—just a difference of opinion." He tugged at Ottar's arm without budging him a fraction of an inch. "Doc, take Thorhall up to the house and buy him a couple of beers while I talk to Ottar."

Dallas fired a few more shots to keep the conversation going and eventually the two men were separated and Thorhall hurried off for a drink. "Could you sail to Vinland in your own ship?" Barney asked.

Ottar, still angry, had to blink and shake his head for a few seconds before he knew what Barney was talking about.

"Ship? What about my ship?" he finally said.

Barney patiently repeated the question and Ottar shook his head in a very positive no.

"Stupid question," he said. "Longships for raiding, up rivers, along the shore. No good in big seas. For going across the ocean you must have a *knorr*. This is *knorr*."

The differences were obvious now that Barney was looking for them. Where the dragon-prowed Viking ship was long and narrow, this *knorr* was wide and stood high out of the water—and was at least a hundred feet long. It appeared a sound vessel in every respect.

"Could you go to Vinland in this ship?" Barney asked.

"Sure," Ottar said, glancing up towards Thorhall and clenching his fists.

"Then buy it from Thorhall."

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"You, too!" Ottar roared at Barney.

"Wait—hold on, just listen. If I kick in part of the money, can you afford to buy this thing?"

"Cost a lot of marks."

"Yachting is an expensive hobby. Can you buy it?"

"Could be."

"That's agreed then. If he says you bought it a couple of months ago then you must have—*don't hit me!* I'll give you the money and the Prof will take you back to Iceland to make the deal and things will be all O.K."

"What you talking about?"

Barney turned to Jens Lyn who had listened to the entire conversation. "You're following me, aren't you, Jens? We agreed this morning that Ottar was to sail to Vinland. He tells me now he needs a different ship for the job. Thorhall says he came and bought this one two months ago. So he must have done it. So let's arrange quick for him to do it—before this thing gets any more complicated. Take Dallas along for protection and explain the whole thing to Hewett. You better use the motorboat. Go with the whole bunch to Iceland—to Iceland a couple of months ago, buy the ship, arrange for it to get here today, then get right back. Shouldn't take you more than a half an hour. Pick up some marks from the cashier to buy the ship with. And don't forget to talk to Thorhall before you go and find out how much Ottar paid so you can bring the right amount."

"What you are saying is a paradox," Jens said. "I don't believe this is possible . . ."

"It doesn't matter what you believe. You're on salary. Just do it. I'll oil Thorhall up so he'll be in a better mood when you get back."

The jeep pulled away and Barney went to liven up the dispirited drinking party. The northmen stayed carefully in two groups, the newcomers behind their leader, and there were many black looks and very little drinking. Gino came up with a bottle he had pulled out of his lens bag.

"Like a slug of this, Barney?" he asked. "Real grappa from the old country. I can't drink the local brew."

"Your stuff is almost as bad," Barney told him. "But try Thorhall, he'll probably like it."

Gino pulled out the corncob cork and took a long drag, then held it out to Thorhall. "Drekkit!" he said in passable Old Norse, "ok verid velkomnir til Orkneyja."*

The redbearded Viking accepted the hospitality, took a drink, coughed, looked closely at the bottle, then drank again.

The jeep returned in less than the half an hour Barney had estimated, but there had still been enough time to get the party rolling, the ale

*"Drink! And welcome to the Orkney Islands."

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flowing, and most of the grappa finished. There was a marked pause in the joviality when Ottar strode over to them. Thorhall stood up quickly and put his back to the wall, but Ottar was beaming with pleasure. He pounded Thorhall on the shoulder and in a moment the difficulty was over, everyone relaxed and the party really got rolling.

"How did it go?" Barney asked Jens Lyn, who climbed from the jeep with much more care than Ottar had shown. In the few minutes he had been away he had grown a three-day beard and developed great black pouches under his bloodshot eyes.

"We found Thorhall easily enough," he said hoarsely, "and received an enthusiastic reception and had no difficulty purchasing the ship. But we could not leave without a celebration, it went on day and night, and it was more than two days before Ottar fell asleep at the table and we could carry him out and bring him back. Look at him, still drinking, how does he do it?" Jens shuddered.

"Clean living and plenty of fresh air," Barney said.

The shouting and happy northern oaths were growing louder and Ottar showed no signs of weakening under the renewed partying pleasures. "It looks like our male lead and all the extras aren't going to be working today, so we might as well call a meeting and lay our plans for the filming in Vinland and aboard this ship—what did you call it?"

"A *knorr*. Nominative, *her er knorrur,* accusative, *um knorr* and . . ."

"Stop! Remember, I don't tell you how to make movies. I want to take a look at the *knorr*, she appears steady enough for a camera, and see how many scenes we can use it in. Then we'll have to make plans for meeting in Vinland, keeping track of the ship somehow. There's plenty of work to do. We're over the hump and on the downgrade now—if nothing else goes wrong."

A gull screamed loudly and Barney quickly reached out and knocked on the stained wood of the *knorr's* hull.

XII

"I kill you, you mannhundr,* throw water in my face!" Ottar shouted.

"Cut," Barney said, then walked down the deck and handed Ottar a towel. "Your line is, 'Stay away from that sail—I'll kill the first man that lays a hand on her. Full sail! I can smell land, I tell you. Don't give up hope.' Now that is what you're supposed to say. There's nothing at all about water in your speech."

"He threw the water on purpose," Ottar said angrily.

*An old Norse term of insult that can be translated as "mad-dog" but is closer in meaning to the German *schweinhund.*

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"Of course he did. You're at sea, miles from land, in the middle of a storm, the storm blows the spray into your face. That must happen to you all the time at sea. You don't get angry every time it happens and call the ocean bad names, now do you?"

"Not at sea. On dry land in front of my house."

There was no point in explaining again about how they were making a picture, and how the picture was supposed to be real, and how the actors must think of it as being real. He had been over that ground about forty times too often. Movies meant nothing to this chunk of Viking virility. What did mean anything to him? Eating, drinking and the simpler pleasures. And pride.

"I'm surprised that you let a little thing like some water bother you," Barney said, then turned to the prop man. "Give me a full bucket, will you Eddie, right in the kisser."

"Whatever you say, Mr. Hendrickson."

Eddie took a long-arm swing and hurled the contents of the bucket into the air stream from the wind machine, which blew the solid spray into Barney's face.

"Great," he said, trying to keep his jaw from shaking. "Very refreshing. I don't mind water in my face." His smile had a ghastly set to it because he was half frozen to death. The September evenings in the Orkneys were cool enough without the drenching, and now the rushing air cut through his wet clothes like a knife.

"Throw water on me!" Ottar ordered. "I'll show you about water."

"Coming up—and don't forget your lines." Barney stepped back out of camera range and the projectionist called over to him.

"Reel is almost empty on the back projection, Mr. Hendrickson."

"Rewind it then, hurry up or we'll be here all night."

The heaving, storm-tossed sea vanished from the back projection screen and the company relaxed. The prop men, on their platform next to the *knorr*, switched on the electric pump to fill their barrel with more sea water. Ottar stood alone, at the steering oar of the beached ship, and frowned angrily at the world. The big spotlights made a brilliantly lit stage of the *knorr* and the bit of beach beside it, the rest of the world was in darkness.

"Give me a cigarette," Barney said to his secretary, "mine are soaked."

"Ready to go now, Mr. Hendrickson," the projectionist shouted.

"Great. Positions everyone, camera." The two prop men threw their weight onto the long levers so that the bit of false decking that Ottar stood on pitched and tossed. "Action."

With jaws clamped, Ottar stared into the teeth of the gale, fighting the steering oar that a man out of

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sight below was trying to pull out of his hands. "Stay away from the sail!" he shouted. "By Thor I'll kill any man that touches the sail." The water sprayed over him and he laughed coldly. "I don't mind the water—I like water! Full sail—I can smell land. Keep hope!"

"Cut," Barney ordered.

"He's a great ad libber," Charley Chang said. "That wasn't quite the way I wrote it."

"We'll leave it in, Charley. Any time he gets that close I call it a bull's-eye." Barney raised his voice. "All right, that wraps it up for today. Morning call at 7:30 so we can get the early light. Jens, Amory—I want to see you up here before you go."

They stood in the waist of the ship, near the big mast, and Barney kicked the deck with his heel.

"Can this thing really make it to North America?" he asked.

"There is no doubt of it," Jens Lyn said. "These Norse *knorr* were better ocean-going vessels—and faster ones—than the ones Columbus had, or the Spanish and British ships that sailed to the new world five hundred years later. The history of these ships is well recorded in the sagas."

"Remember, we've come to doubt some of the sagas of late?"

"There is other evidence. In 1932 a replica of one of these craft, just sixty feet long, made the westward passage along one of the routes Columbus used—and improved on Columbus's best time by over thirty percent. There are many misconceptions about these vessels. For instance, it is believed that they could only run before the wind with their large, square sail. Yet they could—they can—sail within five points of the wind. In fact, most interesting, the point of sailing is called *beita* from which we derive the modern term of 'beating' up to windward."

"I'll take your word for it. What's that stench?"

"The cargo," Jens said, pointing to the large mounds with tight-lashed coverings that stood along the deck. "These ships do not have holds, so all the cargo is carried on deck."

"What's the cargo—Limburger cheese?"

"No, mostly food, cattle feed, ale, that sort of thing. The odor comes from the hide tarpaulins that are waterproofed with seal oil tar and butter."

"Very ingenious." Barney pointed into the dark mouth of the open well behind the mast. "What happened to the hand pump you were going to install here? This ship has to get to Vinland, or we have no picture. I want every precaution taken to make sure of that. Amory said a pump would be an improvement—so where is it?"

"Ottar refused to have it," Jens said. "He was very suspicious of it and was afraid it would break and

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he wouldn't know how to fix it. You can say one thing for the system they use: one man standing in the well and filling a bucket and another throwing it overboard with this wooden arm. It may be crude but it always works."

"As long as they have buckets and men, which I'm sure they'll have enough of. All right, I'll buy that. I don't want to teach Ottar his business—I just want to make sure he gets there. Where is this navigation thing you rigged, Amory?"

"It's sealed inside the hull where it can't be tampered with, and there's just a simple dial topside for the steersman to look at."

"Will it work?"

"I don't see why not. These northmen are very good navigators in their own right. Their sea passages are usually very short so they set their course and sail from a landmark astern to one ahead. They know how the ocean currents run and the habits of the sea birds so they can follow them to land. In addition to which they can estimate their latitude very closely by the height of the North Star above the horizon. Any assistance we give them should fit within the system they already use, so it can be an additional help—but one that wouldn't cause a tragedy if it failed. The most obvious aid would seem to be a simple magnetic compass, but that would be too foreign to them, and a compass is particularly difficult to use this far north where there are so many magnetic anomalies and where the difference between true north and magnetic north is so marked."

"That was what you didn't do. So what did you do?"

"Sealed a gyrocompass into the stern up against the hull here, along with a load of new long-life nicad batteries. We'll turn it on when they leave and it should run at least a month before the batteries poop out. The gyrocompass is one of the new microminiaturized, no-tumble, no-precession things developed for rockets. Then right here, set into the rail by the steersman, is the compass repeater."

Barney looked in through the thick glass covering at the white arrow clearly visible against the black dial. The dial was completely blank except for a single large white spot. "I hope this means more to Ottar than it does to me," he said.

"He likes it a great deal," Amory said. "In fact he is quite enthusiastic. Maybe if I draw a sketch it would be clearer." He took a felt tipped pen and a notepad from his pocket and quickly made a simple drawing.

"The dotted line represents sixty degrees north latitude, and you will notice that this parallel is the one Ottar would normally sail to reach Cape Farewell here on the tip of Greenland, sailing due west and estimating the height of the North Star to keep him on the latitude.

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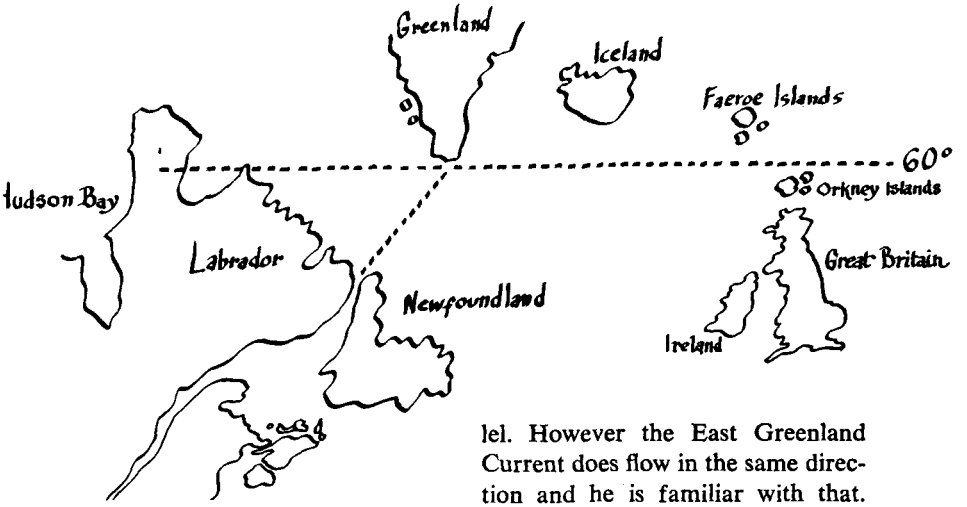

What we will do is set the gyrocompass so that it always points to Cape Farewell. When the pointer on the repeater dial touches the spot—and they both are luminescent and glow at night—the ship is headed in the right direction. They will be guided right to the tip of Greenland."

"Where they are going to spend the winter with some of Ottar's relatives. Fine so far—but what happens in the spring when they have to go on? This sixty degree course will take them right into Hudson Bay."

"We will have to reset the compass," Amory said. "Ottar will wait for us and we'll put in new batteries and point the compass at the Strait of Belle Isle right here. He should have enough faith in the instrument by then to follow it—even though his course won't run along a parallel. However the East Greenland Current does flow in the same direction and he is familiar with that. He'll have no trouble reaching either the coast of Labrador or Newfoundland."

"He'll find Vinland all right," Barney said. "But how do we find him?"

"There is a radio responder sealed in with the batteries. It will automatically send back a signal when it detects our radio signal. Then it is a simple matter of our using the radio direction finder."

"Sounds foolproof. Let's hope it is." Barney looked along the low-bulwarked deck and up at the thin mast. "I wouldn't even want to sail this thing across the bay, but then I'm no Viking. Tomorrow's the day. We've done all the shooting we need to here. Launch the ship in the morning and we'll run it in and out of the harbor a few times, shoot from the shore and from aboard ship. Then turn on your homing

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pigeon and let them go. And your gadget better work, Amory, or we're all going to stay in Vinland and set up housekeeping with the Indians. If I can't bring back this picture with me there's just no point in going back."

Gino popped his head up out of the bailing well like a jack-in-the-box and waved. "They can run it up now, I'm ready."

Barney turned to Ottar, who leaned negligently on the tiller of the steer-board, and said, "Pass the word, will you?"

The tired seamen grumbled darkly as they heaved once more on the windlass. They had been running the big squaresail up and down and tacking about the bay since dawn while the ship handling sequences were being shot. As the drum of the windlass turned, the oiled walrus hide rope creaked through the hole in the top of the mast, hauling up the dead weight of the bulky woolen sail, made even heavier by the seal hide strips that had been sewed on to give it shape. Gino trained the camera up the mast to film it as it rose.

"The time is late," Ottar said. "If we sail today, we better sail soon."

"We're just about finished," Barney told him. "I want to get a good shot of you leaving the bay, and that can be the last one."

"You shot that shot this morning, sailing into dawn you said."

"That was from the shore. Now I want to get you and Slithey at the tiller as you sail from your home into the unknown . . ."

"No woman at no tiller on my ship."

"She doesn't have to steer the thing, she'll just stand by you, maybe hold your arm, that's not much to ask."

Ottar shouted a flood of orders as the sail reached the top of the mast. The halyard that had pulled it up was secured to act as a backstay and unfastened from the drum of the windlass, then the anchor rope was attached in its place. With more heaving—caught on film by Gino—the anchor was hauled up and pulled aboard, a seaweed hung *kilik* made from a large stone held in a framework of wooden rods. The ship was beginning to gather way as the wind filled the sail and Barney hurried the camera into position.

"Slithey," he called out. "On stage, and make it fast."

It wasn't easy to get from the fore to the rear deck of the *knorr* when she was fully loaded. Since there were no holds, and only two tiny sleeping cabins, not only was the cargo packed on deck, but in and around it were over forty people, six stunted cows and a lashed down bull, a small flock of sheep, and two goats that stood high on a peak of the cargo. The bellowing, baaing and shouting made it hard to think. Slithey staggered her way through all of this and Barney

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helped her up onto the tiny deck. She was wearing a white gown with a low-cut kirtle, and looked very attractive with her long blond braids, and her cheeks made rosy by the wind.

"Stand up there next to Ottar," Barney told her, then quickly turned and moved out of camera range. "Camera."

"Good shot of the back of their heads," Gino said.

"Ottar," Barney shouted, "for Thor's sake will you turn around? You're facing the wrong way."

"Facing the right way to steer," Ottar said stubbornly, holding onto the handle of the steer-board that came across the deck from the side, and facing full astern towards the vanishing land. "When leaving land always look at it, making sure of direction. That is the way it is done."

With a certain amount of pleading, cajoling—and bribery—Barney managed to get Ottar and Slithey to the far side of the handle where Ottar had to steer by looking over his shoulder. Slithey stood next to him, her hand resting on the wood next to his, and they got their shots of the receding shore.

"Cut," Barney finally ordered, and Ottar relievedly went back to the correct position.

"I put you ashore around the point," he said.

"Suits," Barney said. "I'll get on the radio and have one of the trucks waiting for us."

Slinging the camera overboard was the only tricky part, and Barney stayed aboard after the others had disembarked, waiting until it was safely ashore. "See you in Vinland," he said, putting out his hand. "Have a good trip."

"Sure," Ottar said, crushing Barney's hand in his. "You find a good spot for me. Water, grass for animals, plenty hardwood trees."

"I'll do my best," Barney said, shaking the blood back into his whitened fingers.

The Viking did not waste any time. As soon as Barney had jumped ashore he ordered, with relieved shouts and loud curses, that the *beitass* be rigged in position. This long pole fitted into a socket in the deck and the other end caught the edge of the sail so that it bellied into the wind. The ship pulled free of the land for the last time and headed for the open sea, the shouts and animal sounds fading into the distance.

"They better make it," Barney said, half aloud. "They just had better make it." He turned away abruptly and climbed into the truck. "Get me to the time platform—and step on it," he told the driver. He could eliminate at least half of his fears at once by finding out if the ship would make a safe arrival in Iceland. The time machine did not simplify his problems, but it at least made the waiting and nail-chewing period a good deal shorter.

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The camp was in a turmoil as they drove up, with the tents being struck and everything loaded for the move to the new location, but Barney had no eyes for it; he tapped impatiently on the windowframe. The entire operation was waste motion if anything happened to the ship. He was out of the car while it was still braking to a stop at the time platform. The jeep was already aboard and Tex and Jens Lyn were watching the professor charge the vremeatron batteries.

"Where's Dallas?" Barney asked.

Tex pointed with his thumb. "In the can."

"At a time like this. . . !"

"We can go without him," Tex said. "It doesn't need the two of us for this job. All we have to do is deliver Ottar's winter ration of whiskey once we know he arrived O.K."

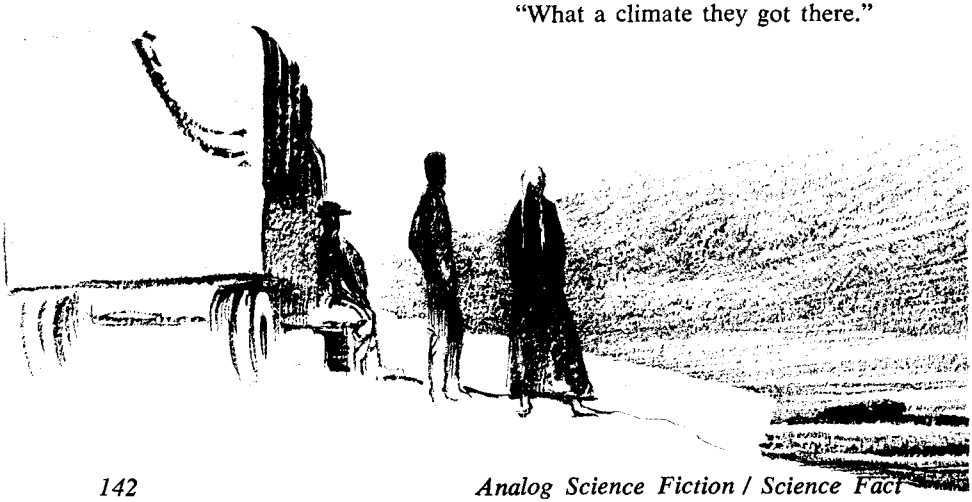
"You'll do what I say. I want two men along for protection, just in case. I don't want any slip ups. Here he comes now—get going."

Barney stepped away from the time platform as the professor activated the field. As always—from the observer's point of view—the voyage seemed to take no more than a fraction of a second. The platform vanished and reappeared again a few feet further away.

It had changed though. Professor Hewett was sealed into his instrumentation shack, while the rest were in the jeep which had its top up and side curtains attached. Almost a foot of snow blanketed everything, and a flurry of airborne snow blew out of the vremeatron's field and coated the grass around it.

"Well?" Barney shouted. "What happened? Come out of there and report."

Dallas climbed down from the jeep and trudged over through the snow. "That Iceland," he said. "What a climate they got there."



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"Save the weather report. Are Ottar and the ship all right?"

"Everything's fine. The ship is up on the shore for the winter and when we left Ottar and his uncle were getting smashed on the booze we brought. For a while there we worried he would never show, the Prof had to make four jumps to find him. Seems he stopped for some time in the Faeroes. Between you and me I don't think he would ever have got to Iceland if his thirst hadn't got the better of him. Once you get hooked on the distilled stuff, the home brew doesn't seem so hot."

Barney relaxed, for the first time in a long time he realized, as the tension faded. He even managed a slight smile.

"Good. Now let's get the company moved while we still have some daylight at this end." He climbed aboard the time platform, walking carefully in the jeep's tracks so he wouldn't get his shoes full of melting snow, and opened the door of the control room.

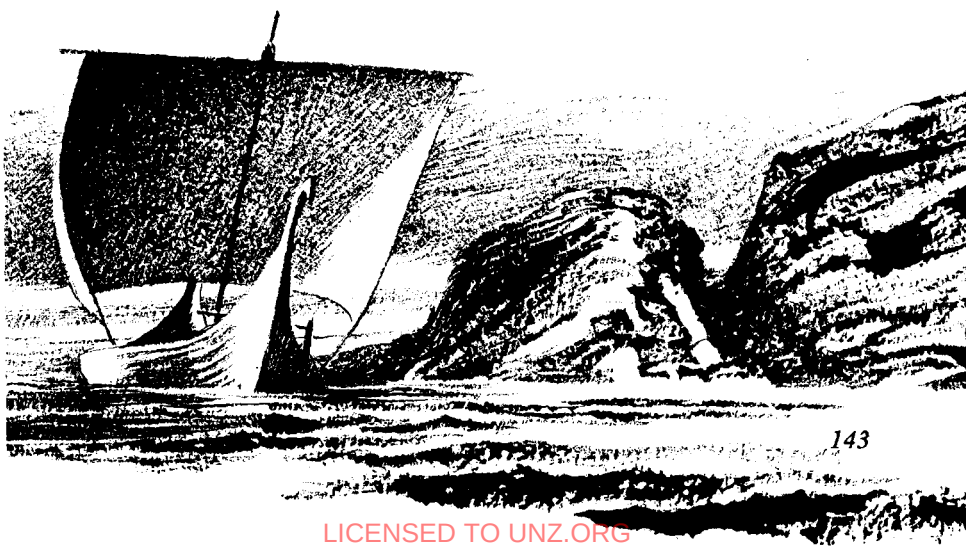
"Got enough juice for another jump?" he asked.

"With the motor-generator going the batteries are charged at all times, a great improvement."

"Then take us ahead in time to next spring, the year 1005, and land us at a good spot in Newfoundland, one of the sites you and Lyn searched when you were looking for the Viking settlements."

"I know just the place," Professor Hewett said, leafing through a notebook. "An ideal location." He set up the coordinates on the board and activated the vremeatron.

There was the now-familiar sensation of temporal displacement and the time platform settled onto a rocky shore. Waves broke, almost over them, and a smother of spray hissed down into the snow. A dark



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cliff loomed above, crumbling and sinister.

"What do you call this?" Barney shouted, above the boom of the breaking waves.

"Wrong coordinates," the professor called back. "A slight mistake. This is a different site."

"You had to tell me! Let's go before we wash out to sea."

The second time jump brought them to a grassy meadow that overlooked a small bay. Tall trees marched up the bowl of the hills around them in solid ranks, and down through the meadow to the sea there twisted a clear and swift-running brook.

"This is more like it," Barney said as the others climbed out of the jeep. "Where are we, Jens?"

Jens Lyn looked around, sniffed the air and smiled. "I remember this well, one of the first sites we checked. This is Epaves Bay, really an arm of Sacred Bay on the northernmost tip of Newfoundland. That is the Strait of Belle Isle out there. The reason we investigated this site..."

"Great. Looks like just what we want. And isn't the gadget in Ottar's ship zeroed in on this Strait?"

"That is correct."

"Then this is the spot for us." Barney bent and picked up a handful of waterlogged snow from the platform and began forming it into a ball. "We'll leave the area down by the mouth of the stream there for Ottar. Then set our camp up over there to the right, at the top of the meadow, it looks flat enough, to keep the Twentieth Century off camera. Let's go. Back to move camp. And I want this slush shoveled off first so we don't have anyone breaking a leg."

Dallas bent over to fasten the lace on his boot and the target was too broad to resist. Barney hurled his snowball square into the middle of the taut denim.

"Here we go, Vikings," he said happily. "Let's go settle Vinland."

TO BE CONCLUDED

THE ANALYTICAL LABORATORY

DECEMBER 1966

PLACE	STORY	AUTHOR	POINTS
1.	Amazon Planet (Pt. 1)	*Mack Reynolds*	2.04
2.	The Weathermakers	*Ben Bova*	2.63
3.	The Price of Simeryl	*Kris Neville*	2.65
4.	The Blue-Penciled Throop	*L. Edey*	3.72
5.	Under the Dragon's Tail	*Philip Latham*	3.79

THE EDITOR.

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Ambassador to Verdammt

The new ambassador demanded very special treatment—not merely VIP treatment, but a sort of SSVIP, super-special class. Which, considering the incomprehensible nature of Verdammt's people was only appropriate.

COLIN KAPP

Kelly Freas

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"Welcome to Verdammt, Lieutenant." Captain Administrator Lionel Prellen extended a hand to the new arrival.

Space Technician Lieutenant Sinclair ignored the hand and saluted gravely. "I understand that the Space Territories Administration on Verdammt has requested Naval assistance in providing a landing grid and subspace beacon to permit an F.T.L. liner to make touchdown."

"That's correct," said Prellen. "We wish to land a V.I.P. at present on the F.T.L. liner. You appear to possess the only grid capable of being assembled here in time to arrest that liner and bring her down safely."

The lieutenant eyed him speculatively for a moment. "In consequence of this request, Admiral Melk has detailed the *S.N.V. Gemini* to stay in immediate orbit around Verdammt and ferry down a pre-structured grid, generators, and beacon equipment for ground assembly. The arrangement is that you are to provide facilities and labor, while I am detailed to supervise the assembly and give technical assistance."

"Excellent!" said Prellen. "We couldn't have asked for a better arrangement. But you don't look too happy about it, Lieutenant."

"Since you ask, Captain, I'm not. The Navy has a great deal in hand these days, and tying-up the *Gemini* for twenty days while your grid is assembled is not my idea of maximum utilization of resources."

Prellen shrugged. "Then the Navy had only to refuse. It was, after all, only an interservice request for assistance."

"The admiral felt it was a legitimate request only if the importance of the operation justified the cost and wastage. He was not then in a position to judge the merits of the case. I'd like to ask you, Captain, is it justified?"

"I think so," said Prellen, evenly. "And fortunately, I don't have to answer that sort of question either for you or for Admiral Melk. My responsibility is to the Space Territories Administration on Terra. But since you've raised the question, the V.I.P. we're interested in landing here is the first Terran Ambassador to Verdammt."

"Ambassador?" Sinclair struggled with his disbelief. "Correct me if I'm wrong, Captain, but the Space Manual lists Verdammt as having no indigenous life form of sufficient intelligence to facilitate or comprehend any form of sociological contact."

"And both you and the Space Manual are wrong," said Prellen. He returned to his desk and sat behind it wearily. "You're both dead wrong. Verdammt has a highly intelligent life form—just how intelligent we don't yet know, but it may well be vastly superior to ourselves. The trouble is that the initial ratings were carried out using the Man-

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neschen scale, which is based on Terran-oriented concepts of intelligence. The life form here is anything but Terran-oriented. In fact, in Terran terms, it is completely unintelligible."

"Yet you consider it intelligent?"

"I do, considering intelligence on the broader definition of ability to consciously manipulate environment, the Unbekannt are at least equal to ourselves. How, or why, they manipulate their environment is as yet beyond us, but the fact that they can, and do, is something we cannot deny. That's why Verdammt rates an Ambassador, and it's he and his staff we wish to land from the F.T.L. So now I want a clear decision from you, Lieutenant: do I get my landing grid and beacon?"

"You'll get them," Sinclair said tersely. "That had already been decided. But with a proviso. The request was to be investigated from every angle, and if found not to be completely justified, the admiral is prepared to refer the whole case back to Terra."

"You mean it's a good platform for playing interservice politics to Admiral Melk's advantage," Prellen said shrewdly.

Sinclair stiffened. "The first ferry will be landing in the morning with foundation material, and the work can start immediately. This afternoon I'd like to do a site survey."

"I'll put you in touch with my engineering officer," Prellen said. "He'll give you all the help you need. But what about you? Are you quartering on the *Gemini?*"

"Unfortunately, no. I'm resident here until the assignment is complete."

"Then I'll offer you a cabin aboard our humble base ship *S.V. Maxwell.* It won't be up to Naval standards, but it's more convenient than a prefabricated shack."

"In the Navy . . ." began Sinclair, then changed his mind.

"I know what they do in the Navy," said Prellen, "but I put it to you that on Verdammt you'll be glad to have the hull of a spaceship between you and the outside during the long and noisy nights."

"I'll be pleased to accept your hospitality," said the lieutenant without enthusiasm. "I've no doubt there's a lot more to Verdammt than is recorded in the *Space Manual.*"

"You could say that twenty-three times over," Prellen said, "and you'd still be only hovering on the edge of the truth."

If Sinclair had had any reservations about quartering in the *Maxwell* he lost them at ten minutes past ten, Verdammt standard time, that evening. Scorning the officer's mess, he sought out the radio room and spent the evening carefully drafting and encoding his report to Admiral Melk and his schedule of operations to the *S.N.V.Gemini.* This done, he had returned to his cabin and prepared for sleep.

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His preparations were disturbed by the sudden screech of something sliding down the outside of the hull, and then the solid *clomp-clomp* of whatever it was apparently ascending the hull again with leaden feet. After some thought he dismissed the incident with a shrug and was almost in his bunk when the noises returned. This time the *clomp-clomp* went down and the screeching up. This was followed by other sounds completely beyond definition; the sensation of gentle rocking as though the ship was being raised and lowered slightly in its shock-absorbing mounts.

Although the phenomena had all the makings of a first-class disaster he was unable to detect any signs of panic, or emergency action, from the rest of the ship, so he decided to investigate. Throwing open the door, he bumped straight into Anton Wald, the S.T.A. psychologist, to whom he had been introduced at dinner.

"Ah!" said Wald. "I was just coming to tell you not to worry."

"What's happening out there?"

"It's only the Unbekannt," said Wald mildly.

"What are they doing—attacking?"

"I don't think so. I honestly don't know what they're doing. It's just something they do now and then for their usual unfathomable reasons. I suppose it pleases them, and it doesn't do us harm, so we let them get on with it."

Sinclair was baffled. "You mean you don't post guards to keep them away?"

"We don't want to keep them away. We're here to study them."

"But they're tearing the ship apart!"

"No," said Wald. "You'll find this peculiar, but they do no damage and they don't even leave a trace of their activities. You won't find as much as a footprint out there in the morning."

"But the noise!"

"So?" Wald shrugged. "What would you have us do? Go out and shoot a dozen? Certainly they're alien, but with that level of intelligence, any attack by us on such a pretext would be morally indefensible. Anyway, I have a sneaking idea that, if they wished to attack us, they could do it in ways against which we'd have no conceivable defense. I don't think I'd care to start a shooting match with the Unbekannt."

"I see," said Sinclair, in a voice which betrayed that he didn't see at all. He turned back into his cabin, closing the door, and resigned himself to a sleepless night. Whatever mysterious rite the Unbekannt were performing on the hull it certainly had sound as an integral part. And Unbekannt sounds were like nothing ever heard before.

Sinclair's first action of the morning was to make an inspection of the outside of the ship. He was rea-

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sonably certain that the noises of the previous night could not possibly have been performed without considerable damage to the hull. To his amazement, there was no sign even of scratches on the surface oxide of the outer skin, nor were there any footprints, or signs of disturbance, in the sand.

In spite of his incredulity, or perhaps because of it, Sinclair became intrigued by the problem, remembering the rocking motion which had been imparted to the ship, and remembering that the vessel itself probably weighed better than a hundred thousand Terran tons. It was difficult to imagine how such forces could have been applied to the ship without leaving any trace, and even more difficult to imagine what was the significance of its accomplishment.

The base ship and its three supply auxiliaries stood in a clearing perhaps four square kilometers in area, beyond which the native Verdammt brushland began its unvarying pattern on all sides. The clearing was artificial and included an area of prefabricated hutments and the site where it was proposed to erect the landing grid. From an engineer's point of view this was an excellent arrangement, with all the available supplies and resources concentrated at a point close to the grid site.

The first ferry arrived strictly on schedule, and Sinclair was quickly occupied attending to unloading details and in liaison with the commanders of the working squads. But from time to time he raised his head and looked deeply into the tantalizing fringes of surrounding brush, wondering if the Unbekannt were out there watching the new activity and what, if anything, they were understanding of it.

Occasionally something flickered against the brushland background, but always too quickly, or too inconveniently, to be seen except out of the corners of his eyes. Gradually, however, he became convinced of the Unbekannt watching from the edges of the brush and making occasional forays a few meters into the clearing, presumably to gain a better view.

It was nearing the close of the work period before he managed to get away to find Wald. The latter was in his office in a prefabricated shack, looking morosely at a curiously wrought crystalline tablet which appeared to flicker and restructure itself even as he turned it in his hands. As Sinclair entered, Wald passed the object carefully to him for examination.

"What is it?" Sinclair asked at last.

"Damned if I know," said Wald. "It's something the Unbekannt left here, but whether to eat it, watch it, sit on it, listen to it, or whatever, we don't know. I sometimes wonder if we ever shall. It could be anything from a crystalline computer to a piece of abstract art . . . or

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something so far beyond our comprehension that the human race may never understand or need one."

"About the Unbekannt," said Sinclair. "Are they hostile in any way?"

"Physically, no. I think they're as anxious as we are to establish communication. But it's in that very fact their danger lies."

"I don't understand," said Sinclair.

"No, I didn't think you would. Think for a moment about the concept *alien*. The Unbekannt are so alien that almost nothing about them approaches anything that we are able to comprehend. They are so far removed from our concepts of a life form as to not only be unintelligible but also completely unimaginable. So, how do you begin to comprehend something beyond the realms of your own imagination? The answer is simple: you can't."

"But surely that depends solely on the scope of the individual mind."

"Not really. Human experience itself limits the individual imagination to a reference frame outside of which it is difficult to handle concepts, because there are no analogies and no coordinates you can use to formulate, or retain, the idea. A concept outside the reference frame doesn't *mean* anything."

"I still don't see the danger," Sinclair said.

The psychologist looked up sagely. "To accept the Unbekannt as reality you have to deny all your own education and experience. They don't mean a thing in our terms, so you have to try to adopt theirs. Stress and disorientation will result. The human brain doesn't react very kindly to that form of pressure. The mildest result is confusion, the direst is complete withdrawal from the conflict—cataleptic shock. That's why I suggest you check with me before you attempt any personal contacts with the Unbekannt. We can't afford to lose you. Not until we've got our grid."

"That's just the point," said Sinclair. "In view of all this I can see no conceivable reason to have an Ambassador on Verdammt until after you've managed to reach some comprehension of the Unbekannt."

"And you resent it, don't you?"

"What do you think!" Sinclair spun swiftly on his heel. "You're damn right I resent it! I resent being sent to this God-forsaken place to install a landing grid and a beacon for a bureaucratic wangle. A wangle that has misled the S.T.A. into believing that this planet requires an ambassador to deal with a life form with which he will never be able to communicate."

"Have you finished, Mr. Sinclair?" Prellen's voice came coldly.

Sinclair, who had not noticed his entrance, swung back wildly.

"No, I haven't finished! If you want my opinion . . ."

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"I don't want your opinion," said Prellen flatly. "I don't want anything from you other than an operative landing grid and an accurately aligned subspace beacon. It may interest you to know, that it was Dr. Wald's own work on Unbekannt psychology, which decided the Space Territories Administration to send an Ambassador to Verdammt, and the timing of the operation and the method of delivering the appointee, were decided by myself."

"You?"

"Yes. Sorry to disappoint you, Sinclair, but we captain administrators do administrate sometimes. So you see, no graft in high places, no bureaucratic wangling, no sinecures. Simply a technical report, an agreement, and a schedule of operation."

Sinclair's face was frank with disbelief.

"I don't believe you, and I don't think Admiral Melk will either. Candidly, I'm going to end my report to him with the recommendation that this whole affair be investigated."

"I find it difficult," Prellen said carefully, "to believe that, in view of what you tell me about the pressure of work, the admiral still has nothing better to do than play politics."

"Prellen, I don't have to take that sort of remark from you!"

"And I don't have to take this sort of insolence from you," said Prellen dangerously. "I'd like to remind you that, until the ambassador takes over, the conduct of Terran affairs on this planet is entirely my responsibility. Temporarily, I represent the legally constituted authority. Do you know what that means on an unfederated Rim world?"

"I'll tell him," said Wald with malicious pleasure, "since there's a great deal of his education they omitted at the Space Academy—such as manners and the gentle art of knowing when to stop. In Terran affairs the captain's power is absolute. And that includes the power of life and death. So, if you'd take a suggestion from me, I'd recommend you to close your mouth before something gets into it—such as my boot."

"You shouldn't have said that, Anton," said Prellen when Sinclair had gone. "Melk's got enough on us already without threats of physical violence to his staff."

Wald grinned affably. "You'd have said it yourself if you hadn't been bound by what passes for protocol."

"Of all the rotten luck, this is the worst," said Prellen. "Out of the entire strength of the Navy they had to send us one of Admiral Melk's satellite pets. There's going to be hell to pay for this anyway, without Melk causing a stir, but I'd hoped to make it a fait accompli before the storm broke. If we can only hold things down that long, we may well get away with it; but, if Sinclair

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raises too much trouble now, the whole affair is liable to blow up in our faces."

Slowly the grid took shape. The pre-structured sections which were brought by ferry were being assembled high and easily. Then the generators arrived, and their squat and heavy forms were compacted into the base of the structure, there to connect with the conductor chains which confined the grid-flux within the web of intricate spars. The immense bright needle of the subspace beacon arrived as a single unit and was set up alongside the grid. A prefabricated shack had been placed nearby, and it was here that Sinclair was installing the transmitter that, operating through the beacon needle, would call the F.T.L. liner out of subspace and guide it down on the featherbed flux field of the grid.

Prellen daily checked the progress of the construction and carefully compared the estimated time of completion with the computer predictions of the position of the liner moving at faster than light speeds across the universe towards them. He was acutely conscious of the relatively narrow time margins with which they had to contend, and he was greatly relieved to find that Sinclair's antagonism towards the aims of the project in no way impaired his ability to control the rapid construction of the grid.

In no small way Prellen was impressed by the immaculate efficiency of the Naval ferry team who delivered exactly the right component to the right position at the precise time it was required, and Sinclair's efficiency was no less in his organization of the placing and assembly. Sinclair's secondary operation of sending detailed reports in code to Admiral Melk on the aims and operation of the S.T.A. establishment was more disturbing. The situation on Verdammt was sufficiently unique to demand quite a radical approach to the problem of establishing communication with its inhabitants, and Prellen was uncomfortably aware that political pressures on Terra could well be shaped to destroy the delicate balance of the extra-sociological experiment he had planned.

He was discussing this very point with Wald one evening when Sinclair came in. His face was alive with jubilation and his hand clutched the transfax print which was the obvious source of his mood. As he caught sight of Wald he nodded with satisfaction.

"I'm glad I've caught the two of you together, because I want to continue a previous conversation. Subject: the Ambassador."

"Go on!" said Prellen, with a glance at Wald. "I take it that you have some further information, no doubt from Admiral Melk."

"I have indeed, Captain Prellen. The admiral is having this whole

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affair investigated, but as a preview, he's sent me the names of the Ambassador and his party aboard the F.T.L."

"He needn't have bothered," said Prellen tiredly. "I could have given you the same information, if you'd been civil enough to ask."

"Even the name of the Ambassador—you do know the name, don't you?"

"Yes," said Prellen slowly. "It's Prellen. He happens to be my son."

"So you admit it!"

"I make it a policy never to deny those of my children born in wedlock."

Sinclair was incensed by his lack of concern.

"You know what I mean! Do you wish me to enlarge on this exposé of string pulling?"

Prellen shot Wald a quick look. "We're naturally interested in the extent of your information," he said guardedly.

"I rather thought you would be. Shall I go into some further details, such as the fact that the embassy staff consists of five women and no men. An interesting piece of personnel selection, that. Need I continue?"

Prellen held up his hand. "No, that will do for now. I don't know how Admiral Melk came by the information, but it's accurate as far as it goes. But tell me, Sinclair, exactly what do you personally hope to gain out of this extracurricular exercise?"

"Are you thinking of buying me off?"

"I wasn't making any offers, but I'm sure you do have a price."

"What makes you so certain, Captain?"

"It's self-evident," said Prellen. "It must be money or promotion, because you've certainly never heard of a thing called principles."

"You dare speak to *me* of priniples?"

"Yes," said Prellen, "and one day you'll understand just what my principles are. Until then I can only hope that you do a better job at engineering than you do at mudslinging, because if you don't, that F.T.L. liner is going to make a hell of a mess when it makes planetfall."

Something dark and shapeless landed with a thud on the translucent dome of the beacon shack, scrabbled furiously down the curving slope with the screech of something imaginable as sliding claws, and leaped from the bottom of the canopy into the sheltering brush. The noise of its passage set Sinclair's teeth on edge. He looked up savagely as the episode was repeated by a second and then a third body. The fourth provided a variation; hitting the canopy low, it achieved the patently impossible by sliding up the dome and disappearing from his ken as it reached the apex.

Sinclair was halfway to the door when he remembered Wald's in-

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junction, and turned to the communicator instead.

"Dr. Wald, there's something playing on the roof of the beacon shack here. I think it must be the Unbekannt."

"Very likely," said Wald. "It's about time they started putting you through the maze."

"Maze?"

"Rat-maze—primary reaction test for experimental animals. Basic stimulus and response stuff. They've assessed most of us here in the past and got tired of it. As a technician, you're different, and I suspect they're now trying to get the measure of you."

"By playing silly-devils on the roof?" Sinclair was incredulous. "What can they hope to learn by that?"

"I've no idea," said Wald. "I warned you that they were beyond comprehension. It's fairly clear, however, that they have no more chance of understanding us than we have of understanding them. Each is trying to assess the other by their own standards, and I doubt if our reactions to them make any more sense than theirs to us. It's a classical nonlogical situation with no answers."

"If I can get my hands on one, I'll soon give you a few answers," said Sinclair.

"It would be interesting to see if that's true," said Wald. "But I don't advise you to try it. How do you know, Sinclair, that one of them out there has not just had a similar thought about you?"

"A damn monkey?"

"Ah! So you've already fallen into the trap!" said Wald. "Because you've never been able to see one clearly you've assumed for yourself they're like monkeys—a limited Terran concept. Factually, they have vastly less in common with monkeys than we do. So your worst danger is in your own false preconceptions."

Even over the communicator Wald heard the fifth Unbekannt start its variant alien dance across the plastic roof, and Sinclair's conversation terminated in a shout of wrath before the connection was broken. Wald held the silent handset speculatively for a moment or two, then nodded at some inner musing.

"By the great paunch of Admiral Melk," he said irreverently to nobody in particular, "some people never take no for an answer."

Opening the door of the beacon shack, Sinclair looked outside. The shack was near the edge of the clearing, and only a broad path separated it from the nearest fringes of waving brush. A screech across the roof warned him of the passage of another Unbekannt, and enabled him to judge the direction of its motion with sufficient precision at least to be able to see the blur which descended and skittered away to the cover of the foliage. He gained

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no impression of height or form, but judged its mass to be encouragingly less than his own, although its speed and agility were phenomenal.

He turned back inside the door, and his fingers closed on a meter length of titanium stock from which he had cut the commutator segments of the beacon. He balanced it thoughtfully for a moment in his fingers, not knowing what sort of force could be applied to the Unbekannt without becoming lethal. Then he took the rod in his hand and went outside to wait.

For a long time nothing happened. The quivering, twilling sounds of the smaller brushland life came to him with startling clarity, and the chill, moist breath of the vegetation closed around his neck like the wrap of a filmy scarf. Finally he heard a screeching across the roof, and, mentally calculating the time and position of descent, he moved back to the wall and waited with rod poised. Precisely where anticipated, the blur dropped like a stone from the roof—and Sinclair struck.

He was never afterwards able to decipher, or describe, what happened next. The impression was not that of hitting a soft, moving body, but of unexpectedly striking a block of stone. The shock transmitted to his fingers by the bar numbed them with pain, and he dropped the metal in anguish. Something spat at him, or shone at him, or did something alien and incomprehensible, and a wave of nausea and disorientation spun his body with almost physical force.

Then the Unbekannt stopped in front of him. Sinclair fought his way out of his confusion and immediately returned to it as his mind strove to reconcile what he saw with what he considered remotely possible. The shattering absurdity of what his eyes perceived tallied in no way with any of the very wide range of things he was prepared to see. And by the time he had climbed back out of the mental abyss of the impossible, his alien antagonist had disappeared.

He stood for a few moments collecting his wits, then looked about. No Unbekannt was visible, but an unformed flickering deeper in the brush suggested that they had not gone far away. Then he heard again the familiar screech and turned to look for his rod.

It was only then, in an agony of shock, that he realized just how far out of his depth he was. For the length of titanium had become rolled and wrought into some marvelously alien and intricate design. His hands were shaking as he picked it up and noted the complexity of closed loops, the immaculate formation of which would have involved a Terran craftsman in many hours of patient labor and the use of an electron-beam welder. But this marvel had been produced in the split-second between the moment the metal had left his fingers and

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the time it had reached the ground. And it was perfectly cold to the touch.

The phenomenon made no sort of engineering sense at all. It was both impossible and factual simultaneously. And it was this, more than anything else he had encountered on Verdammt that made him sweat and wonder and suddenly to feel afraid. Taking hold of the remainder of the rod, he turned and deliberately followed the Unbekannt out into the brush.

"Sinclair's gone." Wald found Prellen in the chartroom of the *Maxwell.*

"Gone where?" Prellen was immediately alert.

"I don't know. Out into the brush, I think."

"Damn!" said Prellen. "That means he's probably gone to see for himself what the Unbekannt are like. As much as I dislike the Navy, I don't think it's good politics to return their technicians in a state of shock—and that's the certain result of such a contact on his somewhat rigid mentality. Anyway, the F.T.L. is only sixteen light-hours out. We've *got to get that idiot back, Anton,* before he damages himself."

"No," said Wald solidly. "I've got to get that idiot back, I know. But, if he's been gone as long as I think he has, he'll be in it pretty deep by now. Too deep even for you. I'll take a couple of the psych team and a triple dose of mescalin. If we don't come back, *don't* come out and try to find us."

"Is it really that bad in the deep areas?"

"It's worse," said Wald. "You've got the statistics on nervous breakdowns for the exploratory teams. Try working that out as a percentage of total personnel turnover."

Prellen smiled wryly. "I already have," he said. "Very well, you're the doctor. Anything you need in the way of support?"

"Only a few prayers and a hell of an imagination," said Wald dryly. "They're the only factors which seem to count out there."

"Then I wish you luck," said Prellen. "Oh, and Anton . . . !"

"Yes?"

"I don't know what encouraged Sinclair to go out there alone, but if he comes to any harm as the result of one of your exercises in psychology, you know the way I'll have to play it."

"I'd not expect it otherwise," said Wald. "But, Captain, you'd have an awful job assembling the proof!"

The brushland bore no discernible paths, but the springiness of the palmate stems enabled him to pass in any direction with the minimum of diversions. Sinclair mentally noted the position of the sun as he started to walk, choosing to follow an area of visual unquiet which hung low in the distant foliage. This patch of indefinable flux in the brush apparently sensed his coming

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and moved ahead of him, sometimes with a surprising burst of speed, yet never moving so far away that it was out of his sight.

Whether it was an individual Unbekannt, or a group of them, he had no means of knowing, and why the aliens registered only as a flicker was a factor which even his training in physics did nothing to explain.

The only familiar aspect of the situation was the suggestion of a lure, or an invitation, to follow. Since Wald had refuted the suggestion that the Unbekannt were physically dangerous, Sinclair felt no great trepidation about following the aliens to whatever destination they were mindful to take him.

Psychologically, however, he now was not so certain of his ground. His brief encounter with the Unbekannt had severely shaken his confidence in the span of his own imagination, and had pointed up Wald's lecture on the more insidious dangers of alien contact. But the possibility of gleaning at least a hint of the technology by which the titanium bar had been cold-formed in milliseconds into its present intricacy of design was something irresistibly attractive to him.

After an hour of such journeyings, he stopped, suddenly worried by a stroke of illusion. He received the curious sensation that momentarily great towers had existed in front of and about him—towers which had risen and vanished with such rapidity that the impression was little more than subliminal. Yet such was the quality of the phenomenon that it was stamped with an unmistakable aura of reality. Stock still now, he surveyed the area of brush hoping to find something which could have triggered the fantasy. The brushland remained the same, quietly moving yet unchanged.

Then hell engulfed him. Suddenly he was plunged into the center of some dark, grinding enormity which might have been the intestines of an engine from the weapon shops of the damned. Or it might have been been to Cro-Magnon or Neanderas one of his own cities would have thal man. His mind shrieked at the unendurable savagery of the impressions which reeked of noise and dirt and turbulence and intolerable power.

Then the scene was gone as raping hyper-metropolis as far beyond his comprehension and endurance part of some clattering, overwhelmidly as it had arisen. The only turbulence remaining was that in his startled brain, and the only noise that of his ringing ears still reacting to the shock. And with a mounting terror in his heart, he waited with a transfixed fascination for what he feared was yet to come.

With uncomprehending eyes Sinclair attempted to follow the series of montages and mirages of scenes and symbols which flowed around and over him. Having no means of

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telling imagery from physical fact he had to force his mind not to attempt to comprehend or interpret, only to record. But even so, some psychosomatic reflex gripped at his stomach, and numbed his head with dizziness. Bewilderingly his surroundings achieved apparently impossible transpositions from the gloomy shadows of some huge Satanic complex to the white-hot negativeness of an isolated point of desert, then to an icy darkness punctuated by random colored shards so unimaginably out of perspective that he had to close his eyes in order to suffer them. And again the images blended and blurred and reformed, gaining substance and alien, incomprehensible meaning by keying some nonhuman semantic trigger which racked him with emotions which his body was not constructed to experience.

His first shocked impression had been that of movement, of being thrown in some inertialess way into a series of different, imbecilic, quasi-environments. Later, some more rational portion of his mind re-appraised the sensations and thrust upon him the half-formed concept that he was factually motionless and that these fantastic quasi-environments were actually being created and dissolved around him.

He remembered that Prellen had defined intelligence with reference to the Unbekannt as the conscious ability to manipulate environment. Dimly, he began to perceive the truism that, given time, all environments, whether by manipulation or natural causes, must change; and that the unimaginable flux and transformation around him was different mainly in pace from any human situation.

For a frantic moment he felt a single point of understanding with the Unbekannt, but in experimentally allowing his mind license to follow it, he lost the concept and found himself in a wilderness of unchartable madness.

His senses were screaming from the overload of unpredictable sensations, which gave rise to great fatigue and a sense of imminent collapse. His feet were restrained by a nightmare leadenness, and the whole structure of concept and analogy, which he had built for himself as a protective rationalization, was beginning to split open about his head. He knew that, if he cracked now and allowed the mad disorder to flow into his mind unfiltered, he would lose touch with reality and be forced to retreat down paths from which there might be no returning.

He did not see Wald and the two psych men as they closed in, moving like men underwater across the shifting nightmare wastes. Only when they touched him did he withdraw his transfixed consciousness from the imbecile panorama and attempt to reestablish contact. He could not make the break-

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through, but he stood submissively while they used a hyphodermic gun on his arm. After a short while the Unbekannt became more real to him and less overwhelming; the quasi-environments grew more understandable and more pregnant with their incredible truths—which somehow he was never quite able to capture and retain.

And they led him away out of the insane realms into the slowly quieter brushland which had itself become seeded with patterns and contrasts of shade and color which hinted of, but never quite revealed, entrances to the vaster region of consciousness and the creatures which dwelt beyond.

It was touchdown time minus two hours when they finally brought Sinclair out of sedation and led him, still trembling with reaction, to make the final adjustments to the apparatus and to activate the grid. Wald stayed with him, assisting in the simpler operations, and watching him constantly with a kind of pained sympathy. Finally Sinclair indicated that the task was finished, and turned to the doctor with a wan smile.

"I have to thank you for getting me out of there. I can't say you didn't warn me."

Wald dismissed the incident with a shrug. "How do you feel now?"

"Jumbled and . . . confused. Somehow, I don't think I'll ever be the same again after that."

Wald nodded. "Hell, isn't it, having a headful of concepts and no way to communicate them? You went in too deep and without preparation. Normally we use drugs which leave you reasonably objective while minimizing the strain on the imagination. It's the only way to survive out there."

"But how can anything so utterly impossible have existence?"

"I've no doubt," said Wald, "they're asking the same sort of question about us, and with about as much hope of finding an answer. The truth is that neither of us are impossibilities; we merely exceed the limitations in the minds of the others. One or both of us, as a species, has got to find a way of making a readjustment if we're ever to achieve any sort of understanding."

The two were now standing outside the beacon shack watching the grid which was deceptively tranquil in spite of the force of the focused flux field which spiraled from it up into the exosphere. At tropospheric levels the unusual Verdammt clouds had congregated in response to the bright puncture

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which the concentrated force field had stabbed through the ionized zones of the upper atmosphere, and an unknown thunder throbbed at high altitudes. But, at ground level, the atmosphere remained serene and even the blue corona discharge from the needle of the beacon seemed muted and subdued.

"I think you can appreciate now," said Wald, "how trapped we are in the web of the things we know. We limit our imagination by hedging our reference frame with a pattern of probabilities and possibilities. We can't comprehend or communicate with the Unbekannt because they run contrary to the whole structure of our assimilated logic. The only conceivable bridge between the two cultures would be to take a human mind, which hasn't been forced too rigidly into the mold of our own logical concepts, and expose it simultaneously to both cultures in the hope that it can learn to accept, if not reconcile, the two mutually contradictory sets of values."

"If there was an individual with such a mind . . ."

"I think there is," said Wald. "Just one such is our ambassador."

Somewhere a bell began to spell out a set of regular, isolated pulses. Sinclair looked at his chronometer.

"Twenty seconds to contact," he said.

All attention was now focused on the high beam of power which projected from the grid into the sky. No matter how familiar one was with the process, it was a sight which never lost its fascination. At one instant the immense F.T.L. liner was carving its way through subspace at a near-infinite velocity; the next it would emerge into normal space-time and be strung, poised and at rest, on the gridbeam like a compass needle on a pin. It was a miracle to which no one ever became reconciled.

Sinclair said "Now!" and the bell broke into an uninterrupted clatter. Simultaneously the ship appeared, far lower than had been anticipated, but still within safety margins. The supersonic shock of its arrival smacked at the ground with the force of a blow, and a brief thunderstorm crackled and flared in its wake, accompanied by the inevitable dense precipitation which the onlookers accepted stoically as part of the arrival ceremony.

Slowly, as though on an invisible thread, the ship descended obediently to a featherbed touchdown atop the cradle of the grid. After a period of apparent inactivity, the bottom hatches opened and a winched cage was run up to facilitate off-loading. As the cage reached the ground there was a general movement in its direction from the waiting assembly.

Wald looked at Sinclair. "Finished here? I'll take you down and introduce you to the ambassador."

Sinclair looked at the coverall he was wearing. "I'm scarcely dressed."

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"No matter. We're not sticklers for formality in the S.T.A."

They walked down to where the knot of people at the foot of the grid was beginning to break up as the ambassador's party moved on.

As the range closed Sinclair stopped as though puzzled, then picked up the pace again and clutched at the doctor's arm.

"Are you serious about this?"

"About what?" Wald's expression was all innocence.

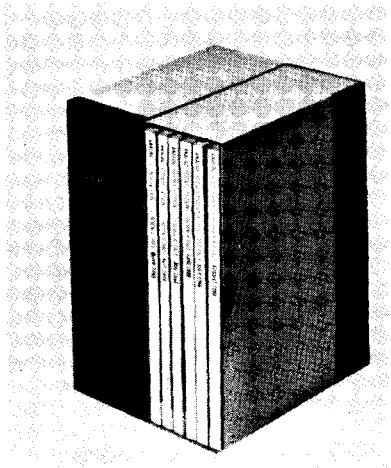
"About the ambassador . . . Tell me it's some sort of joke."

"If you think it's a joke, you have a weird sense of humor."

"But a baby—No wonder you needed the grid for a soft touchdown."

"William Arthur Prellen," said Wald, "Ambassador Designate to the Space Territory of Verdammt. Age . . . twenty-seven days, or thereabouts. He's getting a bit old for the job, but he's the best chance we have of establishing contact with the Unbekannt. We intend to bring him into contact with them with sufficient frequency and for sufficient lengths of time that his formative mind grows to accept them equally with ourselves. What's the matter? You're looking a bit grim. Don't tell me you've just realized the S.T.A. isn't as soft a service as it appears?"

Remembering his own experiences in contact with the Unbekannt, Sinclair was feeling rather sick. "And you really think you have a chance of doing it this way?"



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"Just a chance," said Wald, "and it's a dangerous one at that. Dangerous to young Prellen and to those who put him there. This could well be Admiral Melk's greatest victory."

"He'll never know," said Sinclair. "Not from me, anyway. I never dreamed you'd risk so much!"

"And the Unbekannt," said Wald. "That crystal in my office . . . did I mention that it grows a little every day? I suspect it's an embryo Unbekannt. Their ambassador to us, so to speak. It would seem we've already achieved that first point of understanding." ■

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P. Schuyler Miller

the reference library

YEAR OF THE IMPASSE

This is going to be a year in which the voters on the two major science-fiction awards—the "Hugo" awarded by members of the annual World Science Fiction Convention (New York, Labor Day weekend: no further information as yet), and the new "Nebula" award of the Science Fiction Writers of America—will have to choose among at least four outstanding novels, any one of which would be a shoo-in in almost any other year. Oddly enough, all four are expanded from novelettes or novellas that won or should have won awards of their own.

The four are the hardback expansions of Daniel F. Keyes's "Flowers for Algernon" and James Schmitz's "The Witches of Karres," already reviewed here, and two paperback novels by a relatively new writer, Roger Zelazny. "The Dream Master" (Ace Books No. F-403; 155 pp.; 40¢) won and richly deserved the SFA novella award in its shorter version, "He Who Shapes" (Zelazny got a second Nebula for his novelette, "The Doors of His Face, the Lamps of His Mouth"). "This Immortal" (Ace No. F-393; 174 pp.; 40¢) tied with Frank Herbert's "Dune" for last year's "best novel" Hugo, in *its* original form: ". . . And Call Me Conrad." At the moment I don't know which would get my vote for best of 1966.

No two of Roger Zelazny's stories have been alike, or almost alike. He can swing from the intricately plotted adventure of "This Immortal," peopled with the reincarnations of the men and monsters of Greek mythology, to the equally intricate labyrinths of the human mind in "The Dream Master." His people are sharply delineated, his fantasy has body to it, and although he hasn't yet shown any talent for the kind of logical humor that Schmitz put into his grand "Witch-

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es," there's no saying he won't do that, too.

The setting of "This Immortal" is Earth of a future when the planet has been hammered into radioactive slag and crumbling ruins, Mankind has fled to the stars and been allowed to take refuge among the worlds of the Vegan empire, and a back-to-Earth movement has almost gasped its last. Its hero is Conrad Nimikos, the *kallikanzaros* of Aegean folklore, immortal or nearly so, leader of a rebellion in his former incarnation as Karaghiosis and a commissioner of human antiquities on Earth in his present person. He is assigned as guide to a Vegan bigwig whom he may have to assassinate, and finds that several members of his oddly assorted travel group have the same idea. The action winds back and forth across the planet and comes to a rich, fantastic and violent climax in the mountains of Greece, with the Vegan's motives still a puzzle, to be logically revealed only at the end. Mutant monsters, satyrs, patriots, poets, assassins . . . there is a place for them all in this fabulous story.

In "The Dream Master," as you know if you read the shorter "He Who Shapes," the theme and story are utterly different. Render, the protagonist, is one of the handful of psychoanalysts who are able with electronic help to literally share minds with their patients . . . to insert themselves into neurotic dreams and force them into shapes which reveal the psychic drives behind them. But as the story progresses, it is evident that Render is no sound man himself, and when he undertakes to give a blind woman the experience of seeing through his electronic linkage, his fate becomes inevitable. Praise be, it has not been twisted into a "happy ending" for the book.

The theme, needless to say, is wholly serious and handled seriously, yet the touches of detail that block in the future world in which Render and the others live are lovingly engraved. In both books, the background is as minutely realized as a Sime illustration for one of Dunsany's tales—and as vital to the story.

Outstanding as Keyes's and Schmitz's books are, I suspect it will be one of these two that wins the Hugo, and possibly the Nebula award for best novel also, though both awards committees may rule them out because of the awards already won by the magazine versions.

THE INDEX TO THE SCIENCE-FANTASY PUBLISHERS

By Mark Owings & Jack L. Chalker • 5111 Liberty Heights Ave., Baltimore, Maryland 21207 • 76 + ix pp. • Paper, $5.00; hardbound, $8.00

In the formal gardens of nuclear Academe, a competent bibliography of a minor writer may be worth a

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Phi Beta Kappa key or even a Ph.D. and an instructorship, while a good, meaty commentary is likely to be good for an associate professorship. The bibliography will be published by a scholarly journal, if it is not too long; the commentary may be brought out by a university press and bought by university libraries.

Science-fiction fans, on the other hand, do these things on their own time, spend their own money, publish their own works, and get limited recognition from other fans. There is a "Hugo" for regularly published fan magazines, but none for outstanding single jobs of bibliographical scholarship. This new index emphasizes the paradox in two ways: it is a good job in itself, and it attempts to list the publications of other fans who have somehow managed to bring out hardbound books of or about science fiction and fantasy.

This arbitrary limitation is all that keeps the index within bounds. If Owings and Chalker had attempted to list all the fan publishers of paperbound books and pamphlets, they would have taken on a life's work. As it is, their house rule forces out such outstanding jobs as the bibliographies by the Tasmanian fan, Donald Tuck, Stuart Hoffman's index of *Unknown Worlds*, and many more very useful works. The publishers qualify for their own list by publishing a very few hardbound copies of their very limited editions.

As Owings and Chalker point out in their introduction: ". . . all the major novels of A. E. Van Vogt, all post-'55 Heinlein (they obviously mean "pre-'55") except the juveniles, all early Isaac Asimov books —including the FOUNDATION trilogy and the robot series in which the three laws first appeared between boards, were from specialty publishers. So were the major works of Henry Kuttner and C. L. Moore, H. P. Lovecraft, *all* of both E.E. and Clark Ashton Smith, most of George O. Smith, David H. Keller, and even the first books of Ray Bradbury, Fritz Leiber, Van Vogt, Robert Bloch, Richard Matheson, all of Robert E. Howard, et cetera."

The fan specialty publishers took the step that the major publishers had not dared venture since the pre-Depression years: they published science fiction. Since the best of them were veteran fans, it was good science fiction. Other publishers have since made money on the very titles on which the fan publishers lost their back teeth. You'll find thirty-six of them here, listed alphabetically, with remarkably full bibliographical data on their publications. (Though a hardback SF book was a necessary qualifier, once a publisher is "in," Owings and Chalker have tried to describe everything he has published.)

Advent . . . Arkham House . . . Fantasy Press . . . Gnome . . . Grandon . . . Prime . . . Shasta: the better-known names are all there, with

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many more that you may not know. Unless you're a collector, you may not want to pay the price the publishers have to charge to get their expenses back and start work on future editions. So get your local college library to buy. There are only three hundred copies—while they last.

NEBULA AWARD STORIES: 1965

Edited by Damon Knight • Doubleday & Co., Garden City, N.Y. • 1966 • 299 pp. • $4.95

Last year saw the organization of the Science Fiction Writers of America (SFWA), a counterpart of the vigorous Mystery Writers of America. It was only natural that the SFWA should decide to make its own annual awards, comparable to the MWA's "Edgars." Unlike the fan-awarded "Hugos," the new Nebula awards represent the judgment of the country's professional science-fiction writers. Unlike them also, the awards will go only to science fiction; fantasy is out.

The first awards were made last spring for the best science fiction of 1965. Frank Herbert's "Dune," serialized here in Analog, was voted best novel of the year (runner-up unknown). This book, first in a series of annual anthologies, contains the winning shorter fiction (novellas, 17,500 to 40,000 words; novelettes 7,500 to 17,500; short stories, less than 7,500) plus four of the runners-up. Two of the runners-up are also from Analog.

An impasse developed in the novella category when Brian W. Aldiss' "The Saliva Tree" and Roger Zelazny's "He Who Shapes" were tied on two successive ballots. They were both given awards. The Aldiss story is something of a stunt, written in the style of the turn of the century when H.G. Wells was first gaining fame. It describes the visit of a spaceship, manned by a pair of hungry, invisible monsters, to an East Anglian farm, with the inference that this "actual" event gave Wells the basis for "The War of the Worlds," "The Invisible Man," and "The Food of the Gods."

"He Who Shapes" has a good deal more meat in it, and is to be developed into a book-length paperback original which may be out by the time you see this. Its hero is a psychiatrist who has developed an electronic means of sharing and to a degree controlling the dreams of his patients. He is not entirely stable himself, and the subtle evidence of his neuroses is one of the nicer touches in the story. Characters are supposed to grow and change in a novel, to meet critical standards; evidently they can also do it in a novella. The crisis comes when Render uses his machine to teach a colleague, a woman blind from birth, what vision is like, and finds the control over the shaping of her dreams taken away from him.

The best novelette is also by Ze-

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lazny, "The Doors of His Face, The Lamps of His Mouth." This is a forceful story of an attempt to catch a gigantic sea monster on the traditional "wet" Venus. The real Venus, a hell of opaque smog, revealed by present-day astronomy, turns up in Larry Niven's "Becalmed in Hell." This is a scientific problem story: a cyborg ship with one crewman is probing the Venusian atmosphere, and control breaks down. Is the cause physical or psychosomatic . . . and what can be done about it? That's the problem.

The best short story was Harlan Ellison's stylized jab at our society's obsession with time: " 'Repent, Harlequin!' said the Ticktockman." The Harlequin of the story is a rebel against the clock-dominated social order, in which minutes lost are days clipped off a culprit's life and the Ticktockman can end it completely. I can't complain, since I didn't vote, but I'd have preferred James H. Schmitz's story of a pair of children and the plants and animals of a strange world, "Balanced Ecology," published here in last year's March issue. It has his unique flavor. Another runner-up, from the September Analog, is Gordon Dickson's black comedy of a computerized society, "Computers Don't Argue," in which a book club order is escalated into a death sentence in a series of computer memoranda.

The Ellison, Niven and Schmitz stories you may already have seen in other collections. The final runner-up is J. G. Ballard's "The Drowned Giant," one of his calmest and strangest stories, also anthologized before the award collection came out.

SFWA is already accumulating nominations for the 1966 awards. No fantasy, and only SF published in American books and magazines —though previous publication abroad is no handicap. The editors of the next volume will be Brian Aldiss and Harry Harrison.

PALOS OF THE DOG STAR PACK

By J. U. Giesy • Avalon Books, New York • 1966 • 192 pp. • $3.25

THE MOUTHPIECE OF ZITU

By J. U. Giesy • Avalon Books, New York • 1966 • 192 pp. • $3.25

These two books, with a third which has not yet been reprinted, might be called the result of the first Burroughs boom. Their author had been writing a series of popular stories for *All-Story Weekly* featuring an occult detective, Semi Dual. It seems likely that with the success of Burroughs' John Carter stories, to which Burroughs had not added since "Thuvia" ran in 1916, the editors began casting around for a substitute.

Giesy's Jason Croft was one of the answers. Like John Carter, he traveled by what would now be called psionic means; in 1918, when "Palos of the Dog Star Pack" appeared, the author used the occult

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terminology with which he and his readers were by now familiar, and sent Jason to Palos, one of the planets of Sirius, by astral projection. Through most of the first book he consequently floats around as an invisible wraith, fiddling with local politics, trying to save a Fair Maidden from Dastardly Villains, and going through all the standard steps of the ritual dance. By funneling his astral self into the body of a hulking moron named Jasor, Croft manages to make physical contact with the beauteous Naia and to save her from a loathsome political marriage, at the same time that he teaches the people of feudal Tamarizia some of the bloodier benefits of civilization.

Giesy even used the Burroughs formula to the point of cutting off his story in mid-flight, though not as drastically as "Princess of Mars" was ended. Jason flitted back to Palos for his wedding, only to find that he had been made Chief Priest of the Palosian diety, . . . and so the second book begins. Needless to say, the Mouthpiece of Zitu cannot marry . . . not even a princess like Naia. Fortunately, this slight technicality is quickly taken care of and Jason can get down to more basic things, such as all-out war.

Volume Three will be "Jason, Son of Jasno," as Palos gets an imitation Carthoris.

"Doc" Lowndes, the veteran fan who is editing these yarns for Avalon, has to fit them all into a standard length. (He protests, by the way, that nothing essential was cut out of the "Darkness and Dawn" series that Avalon is also reprinting from *All-Story*: the long second volume was simply divided into two books.) He is doing it very smoothly. I've never read the originals, so I can't spot the changes, if any. Even so, the "Palos" stories are strictly for collectors and old-timers whose mothers burned their stack of *Argosy* and *All-Story* right after the first World War.

VICTORY ON JANUS

By Andre Norton • Harcourt, Brace & World, New York • 1966 • 224 pp. • $3.75

Apart from the saga of the Witch World, still unfolding, Andre Norton's "Judgment on Janus" has been the strangest of all the author's stories of other worlds and races. It opened more mysteries, posed more threats, left more problems unresolved than any of her other books, and dealt with concepts on the borderland between science and magic. It cried for a sequel—and here it is, swinging the basis of its mystery back to the rational, yet never solving everything, never letting the reader drift into certainty.

In the first book a young man of the Free Traders, a war refugee in the slums of a hostile planet, sold himself into slavery to give his mother a happy death. Shipped in frozen sleep to Janus, he finds it a world where a race of religious fa-

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natics, rough and ruthless, are fighting a planet-wide forest. Then, finding a strange "treasure" in the forest, he catches the "Green Sick" and is transformed into a hybrid being who shares the memories of Naill Renfro and of Ayyar of the Iftin, the green race that once inhabited the tree cities of this strange world. As Ayyar he rescues a girl who has the memories of the ancient priestess Illylle, and with her fights the hereditary foe of the Iftin in the wastes beyond the forest.

As the new book opens, Ayyar and others of the half-people are awakened to find Iftsiga, their tree fortress, planet-old and strong, under attack by the combined forces of Janus—the settlers, the off-worlders at the planet port, the forces of the Enemy in the Waste, and a robot horde of imitation Iftin. The battle of Good against Evil, Ift against That which their race has always fought, makes the book. It is rich in detail, and although the nature of the enemy is clear in the end, the mystery of the changeling Iftin is by no means solved.

Like Robert Heinlein's, Andre Norton's juvenile books are growing more and more adult. The Janus books are nominally for young people, and I trust they will read them, but any adult who fails to is missing a major experience. One warning: if you haven't read "Judgment on Janus," you must read it first. The paper back edition is Ace's No. F-308.

PAPERBACK CLASSICS

"CITIES IN FLIGHT" SERIES

By James Blish •

1. "They Shall Have Stars"
(Avon Books, No. S-210 • 159 pp. • 60¢)

2. "A Life for the Stars"
(Avon No. G-1280 • 144 pp. • 50¢)

3. "Earthman, Come Home"
(Avon No. S-218 • 253 pp. • 60¢)

4. "The Triumph of Time"
(Avon No. S-221 • 158 pp. • 60¢)

James Blish's grand series of the space-wandering cities, covering the next—and last—two thousand years of human history, is at last in print in a uniform edition, all at the same time. The series originated here in Astounding, but its various parts have appeared in various forms over the years, and the final volume has never been published except as a paperback. Notes by the author in each book help tie the four volumes together.

The author has said, in the past, that he considers the English editions of the books the best and definitive version of his epic. I don't have them for comparison, but the copyright credits suggest that these are still the original Avon paperbacks in new format. If they had all been assembled in an omnibus edition, as Asimov's "Foundation" stories are, I feel sure "Cities In Flight" would have gotten into the finals of our poll. It's not to be missed.

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brass tacks

Dear Mr. Campbell:

Re ". . . But Liars Figure" (Analog, Oct. '66): using the selective myopia technique that you employ, it is possible to arrive at a great many startling conclusions:

1. War is a Harmless Pastime.

Consider the very small fraction of bullets that actually kill people in a war. Consider also the fact that over 99% of humanity dies from causes other than wartime abuse.

2. The Sun Does Not Heat The Earth.

If one considers a sphere with the diameter of the Earth's orbit, centered about the sun, and the total surface area presented to the sun's radiations compared to the surface area of the Earth that faces the sun at any given time, it is obvious that the Earth intercepts so little of the sun's daily output as to be insignificant; about $1/\ 2.16(10^{12})$. . . .

3. The Earth Does Not Exist.

If one considers the size of the Earth, in relation to the size of the Universe, even as limited by Hubble's Law, it is obvious that the Earth may be dismissed as insignificant.

4. The Solar System Does Not Exist.

By the reasoning of 3.

5. Subatomic Particles Do Not Exist.

This approaches the ultimate conclusion from the other direction, but is just as good:

6. Nothing exists.

The whole is the sum of the parts, and the parts, of course, do not exist. *Tch, tch.*

These bumblebees are flying

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around, bothering me a little, but if I really believed in them, I wouldn't be writing to you, would I?

LEE HASTINGS CARSON
3412 Ruby Street,
Franklin Park, Illinois 60131

And did you know that statistics show that the birth rate in Sweden rises each year when the storks return?

Dear John:

I have been a science-fiction fan for thirty-five years. I have nearly a complete set of Astounding and Analog for the past twenty-eight years. I am a chemical engineer and hold a very responsible job with a large petroleum company. I have taught Petroleum Technology and have published several articles on the subject. I have a hobby in the study of religions and antiquities. These are my credentials.

While I have written many "letters to the Editor," but never to Mr. John Campbell, about eight years ago, I did compose a letter that was never sent. The letter dealt with the Velikovsky Hypotheses. As you know, the Velikovsky books appeared from 1950 to 1954. Of those scientists who accepted the postulates as conducive to further study, by far the larger group were engineers. While engineers are inclined to be narrow in their views, they are less narrow than other scientists ingrained in their respective disciplines. I have said to many that if Velikovsky's books are not science, they rank with the best of fiction ever written.

In the past fifteen years I have kept a file of two aspects of the controversy.

1. Continuous verification of elements of his hypotheses.
2. The social aspect of the behavior of Science and scientists toward this particular controversy.

In the pursuit of my hobby, a surprising number of items fit into place if historical chronology were changed.

As to the verification aspect—

I. Postulated—Venus is young, hot, has a hydrocarbon atmosphere and an anomalous rotation.

Science "proved" over and over in the nineteenth century that Venus had "normal" rotation and was 23 hours X' Y". The cover was shown to be largely ice crystals. Space-probe data has changed these thoughts which show that, instead of a Ground-Zero temperature of "Earthlike," the temperature is 600-800°F. Cosmologist R. A. Lyttleton demonstrated mathematically that Venus *must* have originated from Jupiter, or one of the major planets. R. M. Goldstein and R. L. Carpenter reported that the radar probes between October 1st and December 17, 1962 confirmed that Venus rotates very slowly and retrogradely. Mariner II confirmed that the planet's 15-mile thick envelope is not CO_2 or water vapor,

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but hydrocarbon. In 1955, Fred Hoyle proposed, on theoretical grounds, that Venus is covered by oceans of oil and its atmosphere is clouded by hydrocarbon droplets.

II. Postulated—At least some portion of petroleum deposits are extraterrestrial in origin.

P. V. Smith (1952) reported that the oil in the Gulf of Mexico is found in Recent Sediment and must have been deposited during the last 9,200 plus or minus 1,000 years. A. T. Wilson postulated an extraterrestrial origin of the entire terrestrial deposit of oil. Wilson (1960) supported the view that the planet Jupiter was the source of hydrocarbons on Venus, on meteorites, and in some of Earth's deposits.

All of the following were predicted by Velikovsky, or were an inferred requirement, were the hypotheses to hold.

1. An enormous solar electrical potential—V. A. Bailey, 1960-61—10^{19} volts.
2. Change in length of day due to electromagnetic effects—A. Danjon, February 1960—length of day increased following a strong solar flare.
3. Electromagnetosphere of Earth extends its influence to the Moon—Space Probe Data.
4. Radio noises from Jupiter—1956.
5. Mars' atmosphere is rich in Argon—Harrison Brown—1955.
6. Volcanic activity on the Moon—Kozyrev—1953.
7. Youth of surface features of Moon—H. Jeffreys—1959.
8. Wandering of the poles of Earth—T. Gold—1955.
9. Ancient habitation on the Kolyma or Lena rivers in northeastern Siberia—A. P. Okladnivok—1951.
10. Reversed polarity of Earth—S. K. Runcorn—1955—and P. M. Blockett—1956.

And so on into the night!

The list is very much longer but it illustrates two points.

1. Velikovsky has been shown to be correct in so many things and shown to be wrong in none.

2. Each item taken in itself has been accepted without reference to Velikovsky and respect to the overall effect of these discoveries. To say that he predicted so many things as to have some "rights" is ridiculous. One would have to conclude that he played the longest long-shot in history!

The real nose-bending time for Science will occur when these new data must be included in overall Science.

The history of the development of "proof" that the solar system has been, is, and always will be, constant is a travesty. The simplest among us knows that there is no "proof" for constancy, but there are abundant indications of inconstancy.

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As to the second aspect, the behavior of Science and scientists toward this particular controversy: I have a son who is studying to be a scientist. I recommend to him and all like him that he not only read Velikovsky's books, but also "The Velikovsky Affair," edited by Alfred de Grazia, University Books, March, 1966. While I was familiar with much of the information, I was further appalled by the implications to the scientific reception system.

Incidentally, I had read the anti-Velikovsky articles by Poul Anderson and Willy Ley. As second-best, the two authors never left the starting gate. I listened to young men shoot holes in their essays without their mental guns leaving the holster.

I cannot find the quotation, but I believe it to be Simon Newcomb writing about the Darwin debates, that history should not judge men of the times too harshly, for it would be repeated in their time. We, who believe that our sophistication has grown to the point that "it cannot happen here," should take heed!

RAYMOND J. DILLIPLONE
310 Wyndmoor Road,
Springfield, Pennsylvania

I'm strongly in agreement that new hypotheses should be given honest evaluation, not rejected simply because "it's theoretically impossible" —that "reason" is, actually, simply saying "Nyah! Nyah! My hypothesis is better'n yours!"

However, Velikovsky's right answers don't prove his theory. The best example of the problem of "right answer from wrong theory" is Jonathan Swift's "Gulliver's Travels" evidence that Cloud-Cuckooland exists. Gulliver reported that the Cloudlanders' astronomers knew of two moons circling Mars, and gave quite accurate data on size and periods of revolution—long before Mars' two small moons were discovered. Since his data was right, this proves that Gulliver did make the claimed voyages to Lilliput, Brobdingnagia, et cetera?

The scientifically unacceptable fact is that some individuals do have flashes of clairvoyance, and somehow "guess" correct answers they have no now-understandable way of perceiving.

My own objection to Velikovsky's material stems from two major items:

1. Taking data from ancient sources, myths, folklore, et cetera is extremely unreliable. Translation of ancient material leads to egregious blunders. E.g., because the translating scholars did not understand Aramaic folk-idioms, the Bible contains the story of Jonah being swallowed by a great fish. The English equivalent of the old Aramaic folk-idiom "in a great fish" is "in a terrible stew." And the Chinese long had a habit of adding in some authentic ancient record some interesting note, where an ancient page hadn't been quite filled. Some-

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thing like "In the fourth year of the reign of Hu Zat, Chu Mup started printing with movable type produced in a machine that cast type from brass matrixes selected by punching keys, and re-sorted by keyed slots." The result seems to show that Chu Mup was using Mergenthaler's Linotype machine about 100 BC.

Again, Alastair Cameron, the astrophysicist, when seeking data on historic-period supernovas, found a reference to a "new star" in a seventeenth century German book, derived from a fifteenth century Latin book, which referred it to an Old French text, which got it from . . . and finally they managed to locate scholars capable of unraveling the languages, and found the original Arabic report. Turned out the "new star" *was a "new* comet" *in the original.*

Then there are the ancient reports of the Unicorn, a beast swifter than any horse, with a single horn—terribly dangerous, terribly powerful. But, the efforts to describe the beast to men, who never saw one, wound up with artists drawing the traditional Unicorn. The beast is now known as a rhinoceros, or "nose-horn."

All of which makes me doubt collections of legend, myth, and ancient reports. Too many ways they can go wrong.

Neither honesty, sincerity, diligence, nor scholarship are sufficient to get reliable understanding from such data. You'd need Infallible Revelation—and judging from the Jonah-in-the-whale item, even Revelation isn't quite adequate.

2. On the other hand, Velikovsky proposes that Venus was coughed out of Jupiter, went into a cometary orbit, tangled with Mars and Earth about 5,000 years ago, and has now settled down into a peaceful orbit around the Sun—the most nearly circular orbit of any planet.

To flout every observed regularity of Celestial Mechanics that way —to ignore completely conservation of energy, momentum, and the laws of motion—takes some explaining. If he says "God ordered it; He suspended all the laws of Nature and made it happen!" he has an explanation. But then he must designate his whole system as "Religious Revelation," and absolutely cannot claim it as Science.

If he insists it's science, then he must explain how the immense mass of Venus could have fallen 400,000,000 miles in the Sun's gravity field, from Jupiter to its present orbit, somehow got rid of the stupendous kinetic energy that fall generated, and acquired the present angular momentum. And how, in something like 8,000 revolutions, its cometary orbit abruptly smoothed out to circular.

I'll allow him a Religious Revelation, like that of Joseph Smith, if he wants.

But don't call that science!

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"PEACE IN OUR TIME . . ."

continued from page 7

Chamberlain seems to have willfully denied the terrible meaning of all the lessons of history. An intransigent fanatic with a semireligious One World plan to be imposed by force . . . and a military power sufficient to make a real try at achieving it. It is impossible to compromise with such a person, until he recognizes he can't do it by fire and sword—or, and this is devoutly to be prayed for!—that that isn't the way it can be done; there's a slower, but better way.

So long as a fanatic is intransigent, you *can not* make peace with him—you can only surrender to him.

Chamberlain did, in 1938, for "peace in our time."

And in 1939 he realized the truth; by that time World War II was inescapable. The Sudeten Incident had escalated itself into the world's second all-out conflict.

But properly, that was WWIV, or maybe V—I'll let historians argue that one. The wars of the Prophet of Islam were certainly a World War.

And the wars of Genghis Khan, the Prophet of the Mongols, rate a designation of World War—all the world known at the time. What proportion of the population of the planet was actively affected by Genghis Khan's war?

Any time a fanatic leader, with a One World plan to be imposed by fire and sword, is allowed to get rolling well—the price of stopping him becomes intolerable.

The characteristics of the basic problem that makes the Great Wars are:

1. An absolutely intransigent leader, who cannot consider any compromise.
2. A publicly avowed philosophy of imposing by force of arms a One World system, to which he is uncompromisingly and sincerely dedicated.
3. A dedicated following of "coreligionists," equipped with arms to carry out the plan.

Now Communism is not an evil doctrine. There are many situations in which it is far and away the best answer to human socioeconomic problems. There are also, however, many situations in which it's one of the worst answers possible.

Leninism, however, *is an evil doctrine.*

Wendell Willkie was a strong advocate of One World. So was Jesus. The fact of being in favor of One Worldism isn't an inherently evil doctrine—though personally, I have reasons for doubting it's anywhere near as good an idea as its advocates think. I'd prefer a system where I could, if I didn't quite agree

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with the One World's policies, retire to live a different way.

But One Worldism, *imposed by force on everyone, is an evil doctrine.*

The Germans, late in WWI, arranged to ship Lenin back into Russia secretly. Reason: Lenin was a powerful, effective advocate of immediate action, imposing his One Communist World idea by violence —by sword and fire—on the world, starting with Russia.

The Leninist Communist doctrine, then, holds as a stated basic of its philosophy that Communism must be imposed on the world by any and all means possible. International Communism means One World Communism, with converts to the new belief "convinced" by the quickest and surest ways possible.

Now it happened that Russia, as of 1919, was badly in need of sweeping reforms. The fact that the Kerenski government had started in that direction didn't count with Lenin and his followers; Kerenski didn't believe in the One True Go . . . er, I mean Communism. The Fanatic and his followers could not compromise; they imposed Communism on Russia.

The real fact of the matter is, that Communism was of immense benefit to Russia; whether you are deeply opposed to the very idea of Communism or not, the Russian people have every reason—every good, solid, hard-headed reason—to feel Communism is a great thing.

Communism in Russia was so busy turning a collapsed feudal state into a modern industrial nation that the Leninist-Communist doctrine of going forth to conquer the world for Communism didn't get into action before the Nazi fanatic tried to conquer Russia.

By the time that was over, and Russia had begun to recover . . . the U.S.S.R. was one of the great, wealthy, high-technology nations of the planet. And a whole generation had passed since Lenin had launched the crusade of sword and fire. And the people of the U.S.S.R. had had all the blood, sweat and tears they wanted just now, thank you so much, and weren't at all in a mood to go forth conquering the world. And they discovered the great desirability of working for a fine life, and holding it now they'd earned it.

The percentage of fanatic followers around was very small. The percentage of well-educated, highly accomplished men and women with something to live for was so high that getting a good crusade rolling . . . well, they saw more reason to live for, than to die for ideas.

The result is that the Chinese Communists began attacking the Russians vigorously. Mao & Co. had conquered China by fire and sword; he had followed the precepts of Lenin faithfully, and was a true Intransigent Follower of the Prophet. He saw clearly that the Russian

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Communists were deviationists; they were compromising the holy principles of True Leninism *by not maintaining absolute intransigence.*

No true Intransigent Follower of the uncompromising Leninist philosophy of world conquest for Communism would have compromised the Cuban missile crisis. Compromise is the ultimate anathema to any true follower of any Absolute One And Only Right Way.

Those deviationist Russians actually acted as though they thought there might be a better way to convert the world than by shooting 'em dead till the only ones left were Our Side.

The other factor that has influenced the deviationist Russian leaders is that they've had a profound education organizing a feudal nation into a powerful industrial nation.

You can *not* make an industrial organization run by decrees. You can *not* get things produced by decreeing that it shall be done this way, now do it!

Instead, you learn what "compromise" really means—and it means "Since perfection in all respects is impossible in this Universe, we must balance various factors and achieve an optimum, which will not be perfect in any respect, but workable in all."

Until you learn that—and learn it in your soul, not just as an intellectual statement—you *can not* get a highly integrated industrial system running.

Example: The Chinese a couple years ago discovered there was an acute shortage of angle irons. Farm production was being delayed because farmers need them. So the government issued a decree that all steel mills start producing angle irons at once.

Not only did this result in more angle irons than anyone had any use for, it forced mills that weren't equipped to make angle irons to divert time and effort to extremely inefficient and roundabout procedures, while uselessly tying up productive effort badly needed for other products in all the mills.

There's nothing like trying to organize a complex industrial economy to force the most intransigent to learn that you have to compromise—to optimize—in a real world.

Now Ho Chi Minh is a good Leninist, too. He is absolutely uncompromising; it is his dedicated intent to bring the Word of Marx to all the men he can reach—with fire and sword as needed. He will not compromise that ideal.

The Viet Cong is, for Mao, what the Sudetens were for Hitler.

The one difficulty is that Kennedy, and now Johnson, refuse to play their part—the Chamberlain "peace in our time" part.

The Hanoi group consider any effort to reach a compromise—to negotiate a reasonable settlement—a vicious effort to make them turn

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aside from the True Dedication, to compromise their principles, and they maintain the absolute, rigid, intransigent attitude that only when the United States surrenders completely, without any reservations whatever, will true Leninist Communists cease attacking. They insist that peace can come only when the United States withdraws completely from Viet Nam, and leaves the area entirely to Hanoi's tender mercies.

Precisely as Hitler insisted that England and France abandon Czechoslovakia, completely abrogating their long-established treaties of mutual defense with the Czechs.

The great Skoda arms works of the Czechs were, of course, soon employed producing the famous German 88's that helped show France her abysmal stupidity in depending on static defenses such as the Maginot Line, and chased the British off the continent in a rag-tag scramble at Dunkirk.

The time to stop a wave of fanaticism is before it gets rolling. Chamberlain thought he'd bought "peace in our time." Younger people who didn't live through that period are, now, experiencing part of what we went through in the period 1938-39—with the difference that we have not sold out "peace in our time" to a fanatic would-be one-worlder.

In 1938, so many people didn't believe Hitler meant what he said in "Mein Kampf"—that he really, genuinely *meant* to take over the world and establish a New Order, with Nazi supermen ruling the lesser races.

I wonder how many believed, when the Moslems started, that they really meant to take over the world by fire and sword?

Or that a dirty, stinking barbarian tribe living in tents on wheels on the Mongolian steppes meant to take over the world?

Of course it isn't a reasonable idea—but who said fanatics are reasonable? Genghis Khan wasn't reasonable—but he did what any sensible man knew was impossible before he started.

Fanatics with arms are not to be trusted, when they have fanatic leaders who plan to take over the world for their Cause.

The problem is proselytizers with guns, a Cause, and an intransigent leader . . . and a feeling of Victory.

If the Leninist-Communists can just be bogged down and held static for a time—as the Moslems were finally stopped at Tours—the cracks in the ramshackle empire-by-force will start showing.

Basically, Communism can be a highly workable socioeconomic system—as the Russians have shown.

But Leninist-type Communism, with its dedication to forced conversion of the world, can *not* be lived with. It says so itself.

By the time the Chinese have learned the facts of organized life,

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and get their economy working well enough to establish a real industrial base—their leaders will no longer be intransigent Leninist-type Communists. They'll have learned why compromise with Perfect Ideals is necessary—contrary to Dogma, Lenin, and the nice, simple, clear-cut way of two-valued, true-false, black-white logic.

Communism is perfectly O.K. by me, *if* they want it.

But we can't stand proselytizing with fire and sword; that has to be stopped.

Incidentally, for the benefit of those thoughtless liberal types who insist it's the United States that's proselytizing with swords, I'd like to use one of their favorite arguments against them.

The essence of the true fanatic with a Cause is his intransigent and absolute refusal to compromise his Great Principles. He has the One and Only Right Way, and will accept absolutely nothing else.

As the thoughtless liberal loves to point out, the U.S. is extremely inconsistent. We've helped dictatorships, aristocracies, monarchies, republics, democracies, and Communist governments. *Tsk tsk.* How terrible; we're illogical, inconsistent, and not really democratic.

Hm-m-m . . . and we're also not intransigently insisting on One And Only One Right Way.

Sometimes dictatorship is the best form of government in a particular situation—maybe democracy won't work for a particular people at a particular time. And sometimes a representative monarchy is the ideal form of government under the existing cultural situation. Occasionally, anarchy is the only practical way of life.

The difference is that a true Leninist-Communist state would know that all such people must be converted, by fire and sword if no other way, to the One Right Way.

It's the intransigent conversion-by-force that is the unlivable danger—not Communism, Monarchy, Christianity, or any other dedicated belief.

It's the uncompromising dedication that can't be dealt with.

Put it this way: Which would you rather have as the ruling power—you're forced by circumstances to choose between these two and no others!—a group essentially similar to the Mafia, or a group with the rigid honesty and religious dedication of Oliver Cromwell and his Puritans?

I suggest you really think that one over, and not give a snap "why, obviously . . ." answer.

Remember that Hitler was a sincere and dedicated fanatic. And that the Chinese Red Guard are sincere and dedicated youths.

Such men are too rigidly honest and dedicated to yield to bribes and underhand deals, as would men who compromise with their consciences . . . and other human beings.

The Editor.

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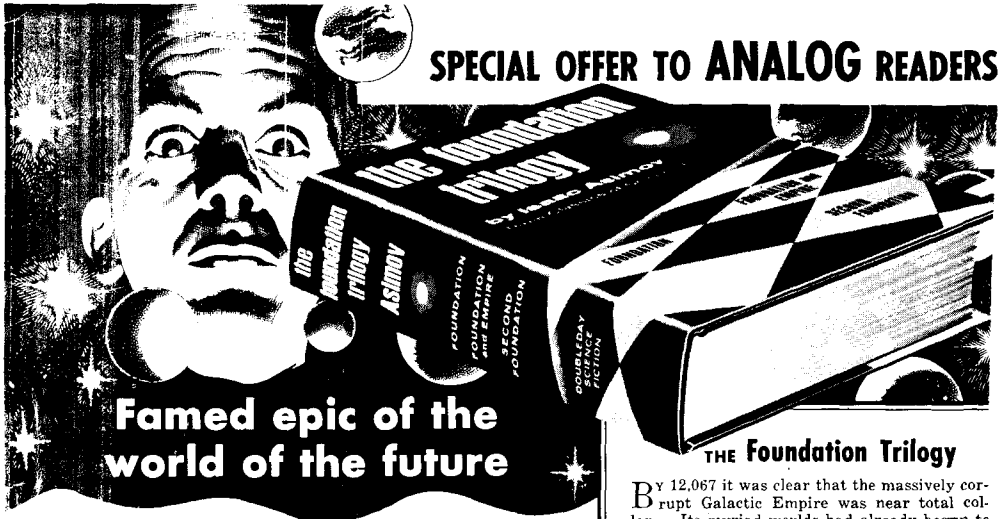

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